University of Alberta

Perfectionism and Competitive Anger in Youth Ice Hockey

by

Jeffrey Kelcey Hayes Vallance

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

Faculty of Physical Education and Recreation

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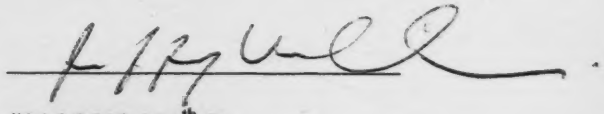

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T6G-1H7

July 2, 2002

University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled 'Perfectionism and Competitive Anger in Youth Ice Hockey' submitted by Jeffrey Kelcey Hayes Vallance in partial fulfillment of the requirements for the degree of Master of Arts.

Dr. John G.H. Dunn

Dr. John Hogg

Dr. Larry Beauchamp

June 28/03

Abstract

Research in sport psychology has suggested that maladaptive perfectionist tendencies may negatively affect athletes' cognitions, affect, and behavior in sport. This study examined the relationship between multidimensional perfectionism, competitive anger, and situation criticality in competitive youth ice hockey. A total of 229 male ice hockey players (M age = 14.15 years; SD = 1.03) completed three inventories: the Multidimensional Perfectionism Scale-Sport (MPS-Sport: Dunn, Causgrove Dunn, & Syrotuik, in press), a sport-modified Trait Anger scale, and two sport-modified State Anger scales (each presenting a competitive scenario with differing degrees of situation criticality) from Spielberger's (1999) State Trait Anger Expression Inventory-2. Results suggest that players with maladaptive perfectionist tendencies are more likely to have a stronger predisposition and likelihood to experience and express competitive anger than players with adaptive perfectionist tendencies, irrespective of the criticality inherent in a situation. Implications for applied sport psychologists and directions for future research are presented.

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CHAPTER 1

Introduction

At the core of all conceptualizations of perfectionism is the tendency of an individual to set extremely high personal performance standards. Central to research in perfectionism has been Hamachek's (1978) theoretical distinction between normal perfectionism (henceforth labelled, adaptive perfectionism) and neurotic perfectionism (henceforth labelled, maladaptive perfectionism). While both types of perfectionists set extremely high personal performance standards, adaptive perfectionists accept mistakes as they occur, are realistic in their evaluations of themselves, and as a result are more able to experience satisfaction in their performance accomplishments. In contrast, maladaptive perfectionists are overly concerned with performance mistakes (even minor mistakes), are exceedingly critical in their self-evaluations (Frost, Marten, Lahart, & Rosenblate, 1990), and as a result rarely (if ever) experience satisfaction in their performance accomplishments.

On the basis of anecdotal evidence, several prominent sport psychologists (i.e., Anshel, 1993; Hardy, Jones, & Gould, 1996; Henschen, 2000) have recognized the perfectionist personality style and its potentially adaptive role in high-level competitive sport. For example, Hardy et al. (1996) state, "Many of the most effective world class athletes are perfectionist in their orientations…they have learned to deal with their perfectionist tendencies in a positive manner, allowing these tendencies to facilitate, as opposed to inhibit, their development" (p. 243). While the terms 'perfection' and 'perfectionist' may commonly be used in sport to describe the qualities of an athletic performance or the characteristics of an athlete's personality (Dunn, Causgrove Dunn, &

Syrotuik, in press), the idea that an athlete *must* be perfect in every competition and/or performance may adversely affect individuals in pursuit of their achievement goals in sport (Zinsser, Bunker, & Williams, 2001).

Throughout the past 15 years, perfectionism has come to be conceptualized as a multidimensional construct. Theorists initially conceptualized perfectionism as a unidimensional construct with the focus being exclusively on the self (Burns, 1980; Hamachek, 1978; Pacht, 1984). However, the contemporary view of perfectionism goes beyond intrapersonal factors, and includes a focus on intrapersonal and interpersonal aspects of the construct (Frost et al., 1990; Hewitt & Flett, 1991).

Perfectionism has been a topic of scientific study in clinical and social psychology over the past 20 years (Slade & Owens, 1998). However, the construct of perfectionism has only recently been examined in sport and exercise contexts. Sport and exercise psychologists have examined the association between multidimensional perfectionism and goal orientations (Dunn et al., in press), obligatory exercise behaviors (Coen & Ogles, 1993), pre-competitive race anxiety (Hall, Kerr, & Matthews, 1998), athlete burnout (Gould, Udry, Tuffey, & Loehr, 1996), and athletes' reactions to competition mistakes (Frost & Henderson, 1991). This lack of research examining perfectionism in sport is surprising given the contention that facets and components of perfectionism may be context sensitive (Stumpf & Parker, 2000). Results from these studies all suggest that certain aspects of perfectionism may adversely affect (or be related to) athletes' cognitions, affect, and behaviors in sport.

Research has suggested that anger may be a significant correlate of perfectionism (Frost & Henderson, 1991; Hewitt & Flett, 1991). Emotion theorists have developed

several conceptualizations of anger. Spielberger (1999) defined anger as a construct that "usually refers to an emotional state that comprises feelings that vary in intensity from mild annoyance or aggravation to fury and rage, accompanied by activation of the neuroendocrine processes and arousal of the autonomic nervous system" (p. 19). Izard (1977) identified several antecedents of anger including, (a) physical or psychological barriers, (b) personal limitations, and (c) failure to achieve a desired goal. The emotion of anger is an inherent part of sports participation and competition (Greene, Sears Jr., & Clark, 1993). Isberg (2000) states, "Anger may affect performance, disturbing precision and concentration or leading an athlete to injure another player" (p. 113). Several researchers have proposed that anger has dysfunctional effects on the psychological and physiological states of an athlete (e.g., Crews, 1993; Kellmann, Altenburg, Lormes, & Steinacker, 2001; Schwartz, Weinberger, & Singer, 1981). Kellmann et al. (2001) examined the relationship between training load, recovery-stress state, and mood perceived by elite German rowers ($\underline{N} = 54$). Results showed that rowers who scored themselves higher on the anger measures (in comparison to athletes who scored themselves lower on the anger measures) were more likely to experience general, emotional, and social stress, fatigue, emotional exhaustion, and interpersonal conflict (e.g., with teammates or significant others). Rowers experiencing anger also reported themselves lower in general well-being than those rowers who did not experience anger as frequently.

Given the salient role that anger is believed to play in sport performance (Isberg, 2000; Lazarus, 2000), identifying potential correlates and predictors of the anger response in sport is an important research endeavor. The emotion of anger has been

identified as a correlate of perfectionism in the non-sport environment (Hewitt & Flett, 1991). Although not directly examined, research and literature pertaining to non-sport settings has suggested a positive relationship between perfectionism and anger (Antony & Swinson, 1998; Hewitt & Flett, 1991). Antony and Swinson (1998) propose that perfectionism may mediate the experience and expression of anger. Given that maladaptive perfectionists set rigid and extremely high expectations and standards for personal performance, failure is often perceived because the maladaptive perfectionist will rarely feel that these standards have been achieved (Frost & Marten, 1990). It seems reasonable to suggest that having maladaptive perfectionist tendencies may result in repeated frustration for athletes because they perceive that the extremely high personal performance standards and goals that they have set for themselves in their sport are consistently blocked or unattained. As Pacht (1984) states, "Their goals are set so unrealistically high that they cannot possibly succeed. They are constantly frustrated by their need to achieve and their failure to do so" (p. 387). In theory, when goals are not achieved (i.e., goal incongruence), negative emotions may result in the form of frustration and anger (Berkowitz, 1989; Dollard, Doob, Miller, Mowrer, & Sears, 1939; Lazarus, 1991). Therefore, an athlete with maladaptive perfectionist tendencies may be at risk for experiencing and expressing anger when the expectations and personal performance standards of the athlete are not achieved.

When assessing negative emotions such as anger, it is necessary to consider the context in which the feelings of anger occur because situations involve varying levels of perceived importance (i.e., degree of situation criticality). Consideration of personality and situational characteristics (i.e., adopting an interactionist framework) may help us to

understand how situations affect and/or interact with the athlete in competition (Dunn & Nielsen, 1996). Situation criticality reflects the degree to which athletes view successful behaviors (or outcomes) as differing with respect to the importance of a successful outcome. To this end, it seems reasonable to suggest that an athlete may experience and express more anger if a performance error occurs during a highly critical situation (e.g., score tied with five minutes remaining in a game of hockey) as opposed to making a performance error in a situation with less perceived criticality (e.g., score tied five minutes into the first period of a hockey game).

Purposes

This study had three main purposes:

1. To examine the influence of situation criticality on the experience and expression of competitive anger across adaptive and maladaptive profiles of perfectionism in competitive youth ice hockey.
2. To examine the relationship between multidimensional perfectionism and trait anger in youth ice hockey.
3. To examine the dimensionality of perfectionism in competitive youth hockey using the newly developed Multidimensional Perfectionism Scale-Sport (MPS-Sport: Dunn et al., in press).

Significance of the Study

If athletes with strong maladaptive perfectionist tendencies are found to be more susceptible to experiencing and expressing competitive anger in sport, then intervention aimed at managing and controlling anger can be developed and administered. These athletes can be taught various techniques such as cognitive restructuring, and redefinition

of the perceived situation (Chesney & Rosenman, 1985). As well, intervention can focus on the personality of the athlete. Athletes with maladaptive perfectionist tendencies can be taught techniques that can enable them to reduce the dysfunctional tendency to set excessive and unrealistically high personal performance standards and goals. Further, these athletes can also be taught how to restructure their maladaptive self-evaluation patterns. Specifically, they can be taught how to accept performance mistakes as they occur, and use mistakes constructively to achieve a higher level of performance. By helping athletes to set realistic personal performance standards and goals and by teaching athletes to focus on personal improvement and effort, athletes may have a more productive and enjoyable sport experience.

Delimitations

The research involves the assessment of competitive male Pee Wee and Bantam aged ice hockey players within a western Canadian province, therefore, results may not be generalizable beyond this geographic location. Because of the specific target sample, the results should not be generalized across age groups and league contexts. Stated differently, results of this study cannot be generalized to players playing at older age levels (e.g., Midget, Junior), or at younger age levels of ice hockey (e.g., Novice, Atom). Given that only one sport domain is assessed (i.e., competitive youth hockey), it is not possible to generalize these findings to other youth sport contexts.

Limitations

The players' variation in age and their years of involvement in ice hockey will not be controlled in this study. When using self-report measures, there are inherent problems such as biased and inaccurate responses. No causal statements about the association

between situation criticality, competitive anger, and multidimensional perfectionism can be made given the correlational and quasi-experimental designs employed in this study. The relationship between situation criticality, anger, and multidimensional perfectionism has not been previously assessed in a sport setting, therefore, the proposed research is exploratory in nature.

Definitions

The following terms are operationally defined for the purposes of this study.

Maladaptive perfectionism. Maladaptive perfectionists are those individuals who set extremely high personal performance standards, have a tendency to be overly concerned with mistakes (even minor mistakes), and are exceedingly critical in evaluating their own behavior (Frost et al., 1990). Maladaptive perfectionists leave little freedom to make mistakes (Coen & Ogles, 1993) and have difficulty experiencing a sense of satisfaction because they have a tendency to perceive that they have not performed up to the high standards that they have set for themselves (Hamachek, 1978). Moreover, maladaptive perfectionists have a tendency to believe that significant others have extremely high expectations for them and evaluate them stringently (Hewitt & Flett, 1991).

Adaptive perfectionism. Adaptive perfectionists are those individuals who set very high personal standards and feel free to be less stringent and less precise in their personal performance evaluations as the situation permits (Hamachek, 1978). Adaptive perfectionists tend to experience positive feelings about themselves because they set challenging goals, but are not rigid with respect to achieving a flawless performance.

Anger. Anger refers to a negative emotion comprised of feelings that vary in intensity from a slight annoyance to fury and rage. These feelings are generally accompanied by arousal of the autonomic nervous system including changes in blood pressure or muscle tension (Spielberger, 1999). Anger is often experienced as a result of frustration when goals are not achieved (Berkowitz, 1989; Dollard et al., 1939; Lazarus, 1991). Anger is conceptualized as both a trait (i.e., dispositional) construct, and as a state (i.e., momentary) construct in accordance with Spielberger's (1999) conceptual framework.

Situation criticality. Situation criticality refers to the degree to which a competitive situation is perceived as being important. Previous research directly examining situation criticality in sport has labelled various situations on a continuum of low to high criticality. For example, batting in baseball when the score is tied in the fifth inning or later, or when the team is behind by one run in the fifth inning or later have been labelled as highly critical situations (cf. Krane, Joyce, & Rafeld, 1994). These situations would likely be viewed as less critical if they had occurred at earlier stages in the game. From the athletes' perspective, situation criticality reflects the degree to which athletes view successful behaviors (or outcomes) as differing with respect to the importance of a successful outcome (particularly as it relates to the outcome of the game).

CHAPTER 2

Review of Literature

Adaptive and Maladaptive Perfectionism

Hamachek (1978) proposed and described two types of perfectionism – normal perfectionism (henceforth labelled, adaptive perfectionism) and neurotic perfectionism (henceforth labelled, maladaptive perfectionism). At the heart of both conceptualizations (i.e., adaptive and maladaptive perfectionism) is the tendency of an individual to set extremely high personal performance standards. Adaptive perfectionists are realistic in their self-expectancies and are aware of their own limitations and strengths. Adaptive perfectionists are able to recognize that performances which include mistakes can still be viewed as 'good' or 'successful' performances. This in turn enables adaptive perfectionists to experience a sense of satisfaction in their performances even when the flawless or perfect performance is not achieved. Burns (1980) described adaptive perfectionism as "…the healthy pursuit of excellence by men and women who take genuine pleasure in striving to meet high standards" (p. 34).

In contrast to adaptive perfectionists, maladaptive perfectionists set extremely high personal performance standards, *demand* high levels of performance, perceive minor mistakes as being catastrophic, have a high likelihood of experiencing negative affect, and consistently perceive failure (Frost et al., 1990; Hamachek, 1978; Hewitt & Flett, 1991). In other words, maladaptive perfectionists rarely perceive success as a result of their achievement-related behaviors because they rarely feel that they have met the desired performance standard. Consequently, maladaptive perfectionists rarely experience enjoyment and satisfaction in their performance endeavors. Burns (1980)

described maladaptive perfectionists as "…those whose standards are high beyond reach or reason, people who strain compulsively and unremittingly toward impossible goals and who measure their own worth entirely in terms of productivity and accomplishment" (p. 34).

Multidimensional Perfectionism

The aforementioned conceptualizations of perfectionism (Burns, 1980; Hamachek, 1978; Pacht, 1984) are unidimensional in that they exclusively focus on the self (Hewitt & Flett, 1991). However, research within the last 15 years that has examined the latent dimensionality of perfectionism has suggested that perfectionism is a multidimensional construct.

Hewitt and Flett (1991) developed a 45-item inventory labelled the Multidimensional Perfectionism Scale (Hewitt-MPS) and administered it to a sample of male and female university students (N = 1106). Factor analytic techniques identified three dimensions of perfectionism that were subsequently labelled Self-Oriented Perfectionism (SOP), Socially Prescribed Perfectionism (SPP), and Other-Oriented Perfectionism (OOP). The first factor (SOP) contained 15 items that focus on the extent to which individuals strive to attain perfection in their own achievement-related endeavors (e.g., "One of my goals is to be perfect in everything I do"). The second factor (SPP) contained 15 items that focus on the extent to which individuals perceive that significant others place exceedingly high standards and pressure on them to perform (e.g., "The people around me expect me to succeed at everything I do"). In addition, SPP reflects individuals' perceptions surrounding the degree to which they feel that significant others are overly critical of their performances. The third factor (OOP) contained 15

items that focus on the extent to which individuals expect or believe that other people should be perfect (e.g., "If I ask someone to do something, I expect it to be done flawlessly").

In a separate study examining the dimensionality of perfectionism, Frost et al. (1990) administered a 47-item inventory (labelled the Multidimensional Perfectionism Scale: Frost-MPS) to a sample of 178 female undergraduate students. Factor analytic techniques suggested the retention of six factors and 35 items. The first factor (Concern Over Mistakes) contained nine items describing the degree to which an individual experiences negative reactions to mistakes and the degree to which the individual perceives mistakes as being reflective of complete failure (e.g., "I should be upset if I make a mistake", "If I fail partly, it is as bad as being a complete failure"). The second factor (Organization) contained six items reflecting the importance an individual places upon order, neatness, and organization (e.g., "I try to be an organized person"). The third factor (Personal Standards) contained eight items reflecting the importance an individual places on setting high personal standards and high performance goals (e.g., "If I do not set the highest standards for myself, I am likely to end up a second-rate person"). The fourth factor (Parental Expectations) contained five items that focused on individuals' perceptions that their parents had very high standards and expectations for them in the performance environment (e.g., "Only outstanding performance is good enough in my family"). The fifth factor (Parental Criticism) contained four items that reflected individuals' perceptions that their parents were overly critical in their performance evaluations (e.g., "As a child, I was punished for doing things less than perfect"). The final factor (Doubts About Actions) contained four items that tapped into an individual's

tendency to feel insecure and apprehensive about personal performance behaviors (e.g., "I have doubts about the simple everyday things I do").

Frost et al. (1990) contended that setting and striving to attain extremely high personal standards is not necessarily pathological. Setting high personal standards may reflect positive self-concept, healthy experiences, and a positive orientation toward life (Frost et al.). Frost et al. consider a person's high *concern over mistakes* orientation as the distinguishing criterion and major component of the maladaptive perfectionist orientation. Concern over mistakes is conceptualized as "negative reactions to mistakes, a tendency to interpret mistakes as equivalent to failure, and a tendency to believe that one will lose the respect of others following failure" (p. 453). Frost et al. also found that the concern over mistakes dimension of perfectionism was most closely related to symptoms of psychopathology (e.g., self-critical depression, guilt, anxiety). Although setting extremely high personal standards for performance may have an adaptive motivational function, Frost et al. suggested that high personal standards, when combined with high concern over mistakes, may be associated with psychopathology, or maladaptive perfectionism as described by Hamachek (1978). Frost et al. called for further research to explain the nature of the personal standards component of perfectionism, and its relationship with other components of perfectionism.

Frost, Heimberg, Holt, Mattia, and Neubauer (1992) administered both the Hewitt-MPS and the Frost-MPS to a mixed-gender sample of undergraduate students (N = 533). Exploratory factor analysis of the nine subscales that make up the two perfectionism scales resulted in a two-factor solution that provided support for Hamachek's (1978) distinction between maladaptive and adaptive perfectionism. The

concern over mistakes, parental criticism, parental expectations, and doubts about actions subscales of the Frost-MPS, and the socially prescribed perfectionism subscale of the Hewitt-MPS collapsed into a single factor that was labelled Maladaptive Evaluation Concerns (i.e., maladaptive perfectionism). The personal standards and organization subscales of the Frost-MPS, and the self-oriented and other-oriented subscales of the Hewitt-MPS loaded on the second factor that was labelled Positive Striving (i.e., adaptive perfectionism).

Psychometric studies analyzing the factorial stability of the Frost-MPS have questioned its six-factor structure (e.g., Purdon, Antony, & Swinson, 1999; Stöber, 1998). Purdon et al. (1999) examined the factorial structure of the Frost-MPS with a sample of 322 clinical patients. Results revealed a clear three-factor solution with (high internal consistency coefficients) as opposed to the anticipated six-factor solution obtained by Frost et al. (1990). The original concern over mistakes and doubts about actions subscales collapsed to form a single factor that was labelled Fear of Mistakes ($\alpha = .91$). The personal standards and organization subscales collapsed to form a single factor that was labelled Goal/Achievement Orientation ($\alpha = .85$). The original parental criticism and parental expectations subscales collapsed to form a single factor that was labelled Perceived Parental Pressure ($\alpha = .91$).

Stöber (1998) also examined the factorial structure of the Frost-MPS with a sample of university students in Germany ($N = 243$). Results revealed a clear four-factor solution with the original concern over mistakes and doubts about actions subscales of the Frost-MPS collapsing into a single factor labelled Concern Over Mistakes and Doubts ($\alpha = .88$). The parental expectations and parental criticism subscales collapsed to form a

single factor labelled Parental Expectations and Criticisms (α = .89). Personal Standards (α = .78) and Organization (α = .86) made up the remaining two factors.

Perfectionism in Sport and Exercise Settings

In the competitive sport and exercise domains, relatively few attempts to examine the consequences and functions of perfectionism have been conducted. However, of the five studies conducted in these areas (i.e., Coen & Ogles, 1993; Dunn et al., in press; Frost & Henderson; Gould et al., 1996; Hall et al., 1998), research indicates that perfectionism plays a salient role upon an individual's cognitions, affect, and behaviors.

In the first direct examination of perfectionism in sport, Frost and Henderson (1991) assessed athletes' perfectionist tendencies and reactions to mistakes in competition. Female athletes (N = 40) competing in five different intercollegiate varsity sports completed the Frost-MPS and various other psychological inventories (e.g., Reactions to Mistakes During Competition Scale; Sport Competition Anxiety Test [Martens, 1977]). Results indicated that concern over mistakes perfectionism was positively correlated with competitive trait anxiety (r = .47, p < .01), negatively correlated with competitive sport-confidence (r = -.61, p < .01), and positively correlated with a tendency to focus on failure (r = .70, p < .01). High concern over mistakes perfectionism was also positively correlated with numerous reactions to mistakes in competition including disappointment with the self (r = .64, p < .01), feelings of letting the team down (r = .68, p < .01), feeling pressure to make up for a mistake (r = .55, p < .01), focusing on a mistake (r = .55, p < .01), difficulty forgetting about a mistake (r = .66, p < .01), and imagining a mistake for the duration of the competition (r = .61, p < .01). Prior to competition (24 hours), concern over mistakes perfectionism was also

correlated with a fear of mistakes ($r = .48$, $p < .01$), images of mistakes ($r = .48$, $p < .01$), lower self-confidence ($r = -.48$, $p < .01$), concentration difficulties ($r = .49$, $p < .01$), and worries about the audience ($r = .61$, $p < .01$).

Frost and Henderson's (1991) results indicate that athletes with high concern over mistakes perfectionism may be at risk of performing poorly in competition due to the negative thoughts they experience during the lead up to competition or due to the negative reactions to mistakes they experience during competition. These experiences may take attention away from task-relevant thoughts required for optimal performance. Sarason, Pierce, and Sarason (1996) refer to these intrusive, unwanted thoughts as "cognitive interference" (p. 139). In the context of this study, it is worth noting the positive correlation between concern over mistakes and disappointment. It is possible that this disappointment for athletes may be expressed in the form of anger (overt and covert), or may lead to feelings of anger and potential aggression.

In a sample of male Canadian high school aged football players ($N = 174$), Dunn et al. (in press) examined the relationship between perfectionism and goal orientations. Goal orientation refers to how an individual perceives success and competence in achievement settings. A *task-oriented* individual determines success based on skill improvement, effort, and making self-referenced comparisons. An *ego-oriented* individual determines success based on normative social comparison and performance outcomes (Nicholls, 1989). Dunn et al.'s results revealed that on average, football players who were higher in ego orientation had a tendency to have higher maladaptive perfectionist tendencies than those low in ego orientation. Significant positive correlations were found between ego orientation and concern over mistakes ($r = .23$),

personal standards (r = .23), perceived coach pressure (r = .25), and perceived parental pressure (r = .16). In contrast, task orientation negatively correlated with concern over mistakes (r = -.16), perceived coach pressure (r = -.17), and perceived parental pressure (r = -.22), but also had a positive correlation with personal standards (r = .20). These results indicate that football players with strong ego orientations may be more likely to be maladaptive perfectionists whereas those with strong task orientations may be more likely to be adaptive perfectionists.

Hall et al. (1998) examined the relationship between perfectionism and pre-competitive state anxiety in a sample of 119 competitive high school runners. Runners completed the Frost-MPS and the Competitive State Anxiety Inventory-2 (CSAI-2: Martens, Vealey, & Burton, 1990) on four separate occasions (1-week, 2-days, 1-day, 30-minutes) prior to a race. Results indicated that runners with maladaptive perfectionist tendencies (i.e., high scores on concern over mistakes and doubts about actions) experienced greater cognitive state anxiety (e.g., worry) and somatic state anxiety (e.g., butterflies in stomach) than runners with adaptive perfectionist tendencies at various times prior to competition. Adaptive perfectionist tendencies (i.e., high personal standards) positively correlated with confidence 1-week (r = .35), 2-days (r = .41), 1-day (r = .36), and 30-minutes (r = .20) prior to competition. Composite perfectionism scores (i.e., summation of all items contained within the Frost-MPS) positively correlated with cognitive state anxiety at all times prior to competition (all $ps < .05$). These results indicate that overall perfectionism scores on the Frost-MPS, as well as certain subscales pertaining to maladaptive perfectionism are associated with cognitive state anxiety prior to competition. Personal standards perfectionism maintained its classification as an

adaptive element of perfectionism (when accompanied by low concern over mistakes perfectionism) (cf. Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Stöber, 1998) given its positive correlation with confidence leading up to competition.

Using the Frost-MPS, Coen and Ogles (1993) predicted that obligatory runners (n = 65) would show higher levels of maladaptive perfectionism than a control group (i.e., non-obligatory runners) (n = 77). Coen and Ogles defined obligatory exercisers as those people who exercise at all costs and who used large amounts of time to train each week. These behaviors are often done at the expense of interpersonal/social relationships. Results indicated that obligatory runners had higher scores on the concern over mistakes, personal standards, organization, and doubts about action subscales of the Frost-MPS than the control group (all $ps < .05$). It should be noted that the greatest discrepancy occurred in the concern over mistakes subscale. These findings provide further evidence for the maladaptive nature of the concern over mistakes dimension of perfectionism.

Although not explicitly referring to multidimensional perfectionism, several studies examining sources of stress in various athletic populations have indirectly inferred that maladaptive perfectionist tendencies may play a role in the stress process in sport (e.g., Gould, Jackson, & Finch, 1993; James & Collins, 1997; Scanlan & Lewthwaite, 1984; Scanlan, Stein, & Ravizza, 1991). For example, Scanlan et al. (1991) used open-ended semi-structured interviews to examine perceived sources of stress among former elite figure skaters (N = 29). Inductive content-analysis revealed several themes that paralleled Frost et al. (1990) and Dunn et al.'s (in press) proposed dimensions of perfectionism such as concern over mistakes (e.g., "experiencing subjective failure consequences"), personal standards (e.g., "feeling a constant need to work hard/improve

when training for competition"), parental and coach expectations (e.g., "striving to meet others' expectations"), and parental and coach criticism (e.g., "receiving criticism from others"). Scanlan et al. noted that skaters who demanded flawless personal performances (i.e., indicative of maladaptive perfectionism) experienced stress, while skaters who strove for flawless personal performances (i.e., indicative of adaptive perfectionism) experienced enjoyment.

James and Collins (1997) examined self-presentational sources of competitive stress among a group of 20 competitive athletes from a variety of sports. Athletes were interviewed with respect to the sources of stress or pressure that they perceived within their respective competitive environments. Inductive content analysis revealed eight general dimensions derived from raw data themes. Comprising the eight general dimensions, a number of lower order themes appeared to closely parallel dimensions of perfectionism identified by Frost et al. (1990) and Dunn et al. (in press) including parental and coach expectations (e.g., "Pressure To Attain External Standards"), parental and coach criticism (e.g., "Implied And Overt Criticism"), and personal standards (e.g., "Not Performing to Required Standard").

Research has also found that maladaptive perfectionism is strongly associated with athlete burnout, where burnout was defined as a syndrome that includes "a psychological, emotional, and at times a physical withdrawal from a formerly pursued and enjoyable activity" (Smith, 1986, p. 37). Gould et al. (1996) examined perfectionism and burnout in a sample of elite (i.e., nationally ranked) junior tennis players ($N = 62$; M age = 16.4 years). Scores on the Frost-MPS revealed that tennis players experiencing symptoms of burnout ($n = 30$) were significantly higher on Frost et al.'s (1990)

dimensions of parental criticism, parental expectations, concern over mistakes, and doubts about actions than their non-burnout counterparts (n = 32). The personal standards subscale maintained its adaptive nature with non-burnout players scoring significantly higher on personal standards perfectionism than those experiencing symptoms of burnout.

Anger

Lazarus (2000) defines an emotion as an "organized psychophysiological reaction to ongoing relationships with the environment, most often, but not always, interpersonal or social [in nature]" (p. 230). Spielberger (1999) defines anger as "an emotional state that comprises feelings that vary in intensity from mild annoyance or aggravation to fury and rage, accompanied by activation of neuroendocrine processes and arousal of the autonomic nervous system" (p. 19). According to Izard (1977), anger occurs when individuals feel restrained, either physically or psychologically, from doing what they wish to do. Physical barriers, rules, regulations, or even personal limitations (physical, psychological, emotional) may inhibit an individual from achieving a desired goal, which can cause the individual to feel frustrated. As frustration compounds, anger often results. Finally, when feelings of anger intensify, aggressive inclinations and behaviors may result (Berkowitz, 1989; Dollard et al., 1939; Miller, Sears, Mowrer, Doob, & Dollard, 1941).

Anger has traditionally been viewed as a state and trait construct (Spielberger, 1988, 1999). Levels of state anger fluctuate from moment to moment and may vary in intensity as a direct function of perceived injustice, attack, or frustration due to goal-blockage at a specific moment in time. In contrast, trait anger refers to an individual's

disposition to perceive a wide variety of situations as frustrating or annoying. Thus, people high in trait anger have a tendency to respond to situations with higher state anger than individuals low in trait anger. Spielberger (1988, 1999) also proposed that anger can be experienced and expressed in two main ways: namely, Anger-in and Anger-out. Anger-in describes the behavioral act of suppressing angry feelings internally as opposed to overtly expressing them through physical or verbal actions. Anger-in may be interpersonal (i.e., directed toward another person or object) or intrapersonal (i.e., directed toward the self) but is unobservable to other people in the social environment. For example, anger-in is reflected in a situation where a hockey player feels angry and covertly makes berating comments to him or herself regarding an opposing player who may have made an illegal hit.

Anger-out describes the behavioral act of overtly expressing anger. Anger-out may be directed toward one's self, other people, or objects (either physically or verbally). Anger-out may also be interpersonal or intrapersonal and is observable in the environment. For example, anger-out is illustrated in a situation where a hockey player skates to the bench and smashes his or her stick across the boards because he/she is angry following a personal mistake.

Anger and Sport Performance

Although anger is believed to be an emotion that is commonly experienced in sport (e.g., hockey fighting, coach-player disputes), few studies have actually examined anger in the competitive sport environment (Greene, Sears, & Clark, 1993). Although there is an abundant amount of research in the clinical and psychiatric literature on anger, empirical studies examining the effects and experiences of anger in sport are lacking. The

lack of anger research in sport seems surprising given that Lazarus (2000) recently identified anger as a core emotion that can affect an athlete's performance in competition. Indeed, Vallerand and Blanchard (2000) have recommended that there is a need "to identify the emotional processes responsible for optimal performance [in sport] and thus improve our knowledge of the consequences of emotional processes" (p. 32).

Positive affect (i.e., feeling good) may have facilitative effects on cognitive organization, motivation, and decision-making. However, negative feelings such as frustration and anger may have potentially disruptive influences on decision-making and cognitive processing (Isen, 1993). Solkoff, Todd, and Screven (1964) examined the effects of frustration on perceptual-motor performance and found that frustrated boys (n = 42; M age = 8.2 years) and girls (n = 42; M age = 8.0 years) had a steady decrement in perceptual-motor performance in an organizational task. Children were randomly assigned to a high-frustration, low-frustration, or a no-frustration group and completed a simple marble puzzle for a prize. The task involved placing blue marbles in one box and white marbles in a separate box while under the impression that a prize would be rewarded to the child who gathered the greatest amount of blue marbles. In the high-frustration group, a prize was visible as the experimenters sporadically released blue marbles interrupting the participant's behavior when the desired goal was close to being achieved. In the low-frustration group, no prize was offered, and the experimenters sequentially released blue marbles. In the no-frustration group, participants completed a modified test that was designed to minimize frustration. Results showed that boys had a steady decrement in perceptual-motor performance in the high frustration condition in comparison to those participants (i.e., boys) in the low frustration and no frustration

groups. The authors concluded that the decrease in perceptual-motor performance that coincided with high frustration among boys might have been due to a competition for resources between the experience of frustration and the participants' attention requirements on the task. Inability to make decisions and attend to task relevant cues in a fast-paced high performance environment such as competitive hockey may result in dysfunctional performance.

Kellmann, Altenburg, Lormes, and Steinacker (2001) administered the Recovery – Stress Questionnaire for Athletes (RESTQ-Sport: Kellmann & Kallus, 2001) and the Profile of Mood States (POMS: McNair, Lorr, & Droppleman, 1971) to 54 German rowers preparing to compete in a junior international championship. Assessment took place 6 weeks prior to the competition. The RESTQ is a recently developed 77-item trait questionnaire designed to measure athletes' perceptions of stress and their ability to recover (Kellmann & Kallus, 2001). Results revealed a number of statistically significant correlations between the anger component of the POMS and subscales of the RESTQ. Anger was significantly correlated with general stress ($r = .60$), emotional stress ($r = .72$), social stress ($r = .67$), conflicts ($r = .55$), lack of energy ($r = .43$), physical complaints ($r = .36$), and emotional exhaustion ($r = .62$). Anger was negatively correlated with general well-being ($r = -.47$) and sleep quality ($r = -.43$). These correlations suggest that athletes with a high disposition to experience anger may be prone to experiencing stress, fatigue, and interpersonal conflict (e.g., with teammates or significant others), all of which may be debilitative towards performance.

Research has also suggested that anger may be negatively correlated with oxygen consumption during running activities. In a meta-analysis, Crews (1992) reported that

negative affect (e.g., anger) may result in a decrease in running economy – defined as "the amount of oxygen consumed to run at a given submaximal speed" (p. 475). In other words, in performance environments that rely on the aerobic system, negative affect (including anger) may result in decreased oxygen consumption, and eventually fatigue. Schwartz, Weinberger, and Singer (1981) used college students ($N = 32$) to examine the effects of various emotions (e.g., happiness, anger, fear) on measures of heart rate, and systolic and diastolic blood pressure during exercise. Students were asked to select a specific situation from their past or future that would evoke the desired emotional state. After invoking an anger reaction, students performed a simple step exercise task. In comparison to other emotional states (e.g., happiness, sadness), significantly higher systolic and diastolic blood pressure was recorded following the experience of anger. In addition, students had significantly higher heart rates during the step test following the experience of anger in comparison to emotional states such as happiness and sadness. Schwartz et al. noted that increases in systolic blood pressure may result in increased peripheral resistance of the blood vessel walls which may in turn activate the inhibition of heart rate. Applied to sport, athletes experiencing anger may be at risk of becoming fatigued due to the lack of blood flow and subsequent oxygen deprivation throughout the body.

Most research (e.g., Crews, 1992; Schwartz et al., 1981) characterizes anger as being debilitative toward performance (i.e., perceptual-motor performance, physiological performance). However, theorists have contended that anger may also serve as a functional emotion in sport (e.g., Hanin, 2000; Lazarus, 2000), although very little empirical evidence exists to support this claim. Lazarus (2000) describes functional anger

as "constructive anger" (p. 243) that may occur when anger facilitates performance. In the context of sport, anger may be constructive when an athlete uses anger as a motivational aid. For example, Hanin and Syrjä (1995) found that some athletes perceived negatively toned emotions (e.g., anger, anxiety) as being facilitative towards performance. Of the 25 Finnish junior ice hockey players who took part in Hanin and Syrjä's study, eight players identified anger as a facilitative emotion. However, Hanin and Syrjä also reported one player who perceived anger to be debilitative to performance. Lazarus has called for further research into how a negatively toned emotion such as anger might influence performance in sport. To this end, Isberg (2000) also suggested that "there is [a] need for more research [in sport] into situational and performance-related anger and its manifestations and functional meaning in the performance process" (pp. 132-133).

Anger and Perfectionism

Antony and Swinson (1998) state, "The experience and expression of anger is mediated by a complex interaction among various biological and psychological factors" (p. 176). Perfectionism may be one such psychological factor. Antony and Swinson discussed the constructs of perfectionism and anger and recognized that when an individual sets extremely high expectations and standards for personal performance, anger may be experienced when the individual fails to achieve these expectations and standards. However, Antony and Swinson failed to consider both the adaptive and maladaptive nature of perfectionism. Because maladaptive perfectionists set extremely high personal performance standards and demand perfect performances from themselves, frequent frustration may result because flawless performances rarely (if ever) occur.

Therefore, failure will generally be perceived because the desired goal response (i.e., perfection in performance) will not be attained. As stated previously, compounding frustration may cause the individual to experience and express anger (Berkowitz, 1989; Dollard et al., 1939; Lazarus, 1991).

Although research has yet to directly examine perfectionism and anger in sport, empirical evidence in non-sport research settings suggests that maladaptive perfectionism (i.e., extremely high personal performance standards and high concern over mistakes) is related to the Type A behavior pattern (Flett, Hewitt, Blankstein, & Dynin, 1994). The Type A behavior pattern is defined as "an action-emotion syndrome characterized by competitiveness, aggressiveness, achievement striving, impatience, and an extreme sense of time urgency" (Spielberger, Johnson, Russell, Crane, Jacobs, & Worden, 1985, p. 5-6). Anger is proposed to be a component of Type A behavior (Flett et al., 1994). Individuals exhibiting the Type A behavior pattern are self-critical, rigid in the high standards they set for themselves, have a tendency to set extremely high goals, and excessively strive in achievement situations (cf. Flett et al., 1994). Based on these features, the Type A behavior pattern is characteristically similar to many aspects of the maladaptive perfectionist profile (i.e., high personal standards, high concern over mistakes, self critical). Given these similarities, it seems reasonable to suggest that the experience and expression of anger may be a common feature of an individual with maladaptive perfectionist tendencies (Hewitt & Flett, 1991).

Flett et al. (1994) found a relationship between high self-standards and the Type A behavior pattern. Two samples of undergraduate students ($N = 333$) completed the Hewitt-MPS and several Type A behavior assessments. In the first sample of psychology

students (n = 233), results revealed significant positive correlations between self-oriented perfectionism and impatience (r = .18) and achievement striving (r = .36). Socially prescribed perfectionism positively correlated with impatience (r = .21), while other-oriented perfectionism positively correlated with impatience (r = .21) in males. In the second sample of undergraduate students from various disciplines (n = 100), significant positive correlations were observed between self-oriented perfectionism and achievement striving (r = .61), between other-oriented perfectionism and impatience (r = .29), and between socially prescribed perfectionism and achievement striving (r = .27) and impatience (r = .25). Because of the extremely high personal performance standards and goals, achievement striving will likely end in perceived failure by maladaptive perfectionists because these individuals rarely feel that their performance goals have been achieved. The maladaptive perfectionist's impatience may also increase the likelihood that frustration and anger will result when personal goals are not attained quickly enough.

Hill, McIntire, and Bacharach (1997) examined the relationship between perfectionism and the Big Five personality factors (Costa & McCrae, 1990). One of the Big Five factors - neuroticism - is composed of six dimensions including anxiety, anger/hostility, depression, self-consciousness, impulsiveness, and vulnerability. Undergraduate students (N = 214) completed the Hewitt-MPS and a widely used personality inventory designed to assess the various personality factors (i.e., the NEO Personality Inventory-Revised: Costa & McCrae, 1992). The anger/hostility dimension of neuroticism was significantly correlated with self-oriented perfectionism (r = .14), other-oriented perfectionism (r = .24), and socially prescribed perfectionism (r = .21). Although

these correlations are quite small, the results do suggest that perfectionism and anger are related, with higher levels of perfectionism being associated with higher levels of anger.

Hewitt and Flett (1991) also hypothesized that socially prescribed perfectionism (i.e., individuals' belief that significant others have extremely high expectations for them and who evaluate them stringently and critically) would be associated with negative affective responses including anger. Hewitt and Flett stated, "Because the standards imposed by significant others are perceived as being excessive and uncontrollable, failure experiences and emotional states, such as anger, anxiety, and depression, should be relatively common" (p. 457). Flett et al. (1994) added that emotional upset (i.e., anger) may result from the perception that significant others are being unfair in their perfectionist expectations. In a sport-specific example, if athletes perceive that they have failed to reach their coaches' expectations, and if this is a valued goal of the athletes, anger may result because the desired goal has not been achieved.

In developing the Hewitt-MPS, Hewitt and Flett (1991) administered the Hewitt-MPS and the Multidimensional Anger Inventory (Siegel, 1986) to a sample of 91 undergraduate students. Hewitt-MPS subscales had moderate to strong positive correlations with negative emotions such as guilt, regret, shame, and disappointment. In accordance with their hypotheses, Hewitt and Flett found that the measure of anger positively correlated with self-oriented perfectionism ($r = .20$) and socially prescribed perfectionism ($r = .44$). However, the multidimensional facets of anger (i.e., anger-in, anger-out, state anger, trait anger; Spielberger, 1988, 1999) were not examined in this study. Given that anger is a multidimensional construct (Spielberger, 1985, 1988, 1999),

future research examining perfectionism and anger must account for the multidimensional nature of the anger construct.

Situation Criticality

Relatively few researchers in sport psychology (i.e., Bar-Eli & Tenenbaum, 1988, 1989; Bar-Eli, Tenenbaum, & Elbaz, 1990; Bar-Eli & Tractinsky, 2000; Dunn & Nielsen, 1993, 1996; Krane et al., 1994; Ransom & Weinberg, 1985; Weinberg, Richardson, & Jackson, 1981) have considered the situational context within which athletes' behaviors occur. In sport, situations involving varying levels of perceived importance (i.e., situation criticality) are likely to occur both within the competitive season and within specific competitions (Krane et al.). Research that considers both the characteristics of the individual and the characteristics of the situation (i.e., interactionist approach: Endler & Magnusson, 1976) is necessary when attempting to understand how various emotions affect athletic performance (Krane et al.). Further, consideration of situational characteristics may help us to understand how situations affect and/or interact with the athlete in competition (Dunn & Nielsen, 1996).

Previous research directly examining situation criticality in sport has labelled various situations as *highly critical*. For example, instances in a baseball game where the score is tied in the fifth inning or later, when a team is behind by one run in the fifth inning or later, or when there is a runner on third base in the fifth inning or later have been labelled as highly critical situations (see Krane et al., 1994). In a volleyball context, a tied score going into the fifth set has also been considered as a highly critical situation (Ransom & Weinberg, 1985).

When identifying and classifying anxiety-inducing game situations, Dunn and Nielsen (1996) asked male and female high performance athletes (N = 185) to identify and elaborate on situations in their respective sports (i.e., ice hockey, field hockey, soccer, basketball) that typically produced anxiety during competition. The classification process surrounding the anxiety-inducing situations (i.e., inductive content analysis) resulted in four superordinate categories. One category, labelled Game/Score/Time Criticality (GSTC), contained game situations with an emphasis on score, time, or perceived game importance (e.g., "Being behind in the closing minutes of an important game", "Trailing in a game by a close margin in the closing seconds"). The GSTC category contained situations where athletes perceived the consequences of failure as having greater perceived importance than if a similar situation (e.g., breakaway in hockey late in a tied game) had occurred at a less critical time in the game (e.g., early in the game).

In a situation of high perceived importance (such as a breakaway in the last few minutes of a tied game), an athlete may feel added pressure because this situation may be the only good opportunity left in the game to score. In other words, the perceived importance (or perceived criticality) of the breakaway increases because the athlete may feel that there will not be any more quality opportunities to win the game. The athlete may also feel pressure because he/she may perceive that significant others in the environment (e.g., teammates, coaches, parents) are expecting a successful execution (i.e., score a goal) on the breakaway. In a situation that is perceived by the athlete as being less important or less critical (e.g., a breakaway midway through the first period of a tied game), the athlete may experience less anxiety due to the belief that there will

likely be other scoring opportunities during the remainder of the game (either for the player or for the player's teammates). Therefore, the degree to which an athlete views a situation as being more or less critical may be dependant on the athlete's perception of whether or not other opportunities are likely to be presented during the remainder of the game.

Athletes may recognize several other factors as having a direct influence on perceived situation criticality. Using a reward contingency (i.e., presence of a prize for success), Marchant, Morris, and Anderson (1998) successfully manipulated the perceived importance of a golf-chipping task in a sample of 52 club level golfers. Participants chipped in a low importance condition for a reward of three golf balls, and a high importance condition for a reward of a new pair of golf shoes. Results indicated that, on average, participants chipping in the high importance condition experienced higher levels of state anxiety than those chipping in the low importance condition throughout all task trials (all $ps < .05$). Thus, the degree to which athletes perceive that different rewards have different value also appears to impact the perception of situation criticality.

Krane et al. (1994) examined the effects of situation criticality on cognitive state anxiety, somatic state anxiety, and batting performance in a sample of NCAA Division I female softball players ($N = 11$). Results indicated that several personal and situational factors predicted levels of cognitive and somatic state anxiety. Under conditions of high situation criticality (e.g., minimal score differential, runner on third base) batters had significantly higher cognitive state anxiety immediately prior to entering the batter's box than in low criticality situations (e.g., high score differential, beginning of game). These results along with previously mentioned studies (e.g., Dunn & Nielsen, 1996) provide

some evidence that athletes' emotions are related to the degree of situation criticality. In particular, the more important/critical an athlete perceives the situation to be, the more likely it is that the athlete will experience higher levels of cognitive and somatic anxiety.

Bar-Eli and Tenenbaum (1989) examined behavioral violations (i.e., an action that is against the rules of the game) as a function of situation criticality among a sample of 53 high school basketball players. It was hypothesized that more frequent violations (both minor and major) would be observed in the end phase of the game (i.e., final two minutes) than in any other phase of the game. Expert judges ($N = 22$) observed 16 high school basketball games and confirmed that the average number of violations such as fouls, charging, and unintentional hitting was highest during the end phase of the game. Further, major violations such as assaulting the opponent without trying to get the ball, hitting, shoving a player, and swearing also occurred more frequently during the end phase of the game. The authors attributed the increase in rule violations to "psychological performance crisis" (p. 237), or an inability to cope with the competition requirements. Based on these results, it seems reasonable to suggest that in highly critical situations (such as near the end of the game), players may be more likely to become frustrated and angry when their desired performance and outcome goals (e.g., winning) are not achieved.

More recently, Bar-Eli and Tractinsky (2000) examined the relationship between the criticality of ball possessions in basketball and athletes' quality of decision-making behavior. Six expert basketball coaches observed the final 5 minutes of ten Israeli first division basketball games. To control for large game standing differentials (i.e., large lead by one team), only games that had minimal game standing differentials (i.e., score

differential ranging from 0-6 points) in the last five minutes were used. In ball possessions within the final 5 minutes of the games that were classified as highly critical by the expert coaches, coaches observed a decrease in the quality of athletes' decision-making behaviors compared to ball possessions occurring in lower criticality situations. Therefore, players may not only be more likely to commit behavioral violations during highly critical situations (Bar-Eli & Tenenbaum, 1988, 1989; Bar-Eli et al., 1990), but they may also be more at risk for impaired decision-making during highly critical situations.

Although research has examined the influence of situation criticality on cognitive and somatic state anxiety, behavioral violations, and decision-making ability, research has yet to consider the direct influence of situation criticality upon anger responses in competitive sport settings. Lazarus (1991) states that both anxiety and anger result from goal incongruence (i.e., degree to which an individual's desired performance or behavior is blocked). It seems likely that during a highly critical situation, the perceived importance of personal goals increases. Therefore, more frustration and anger may be experienced when the desired goal is blocked in a critical situation than when the desired goal is blocked in a less important situation. In other words, it seems reasonable to suggest that like anxiety, anger may fluctuate in response to given levels of situation criticality. Moreover, although anger has not been directly examined in previous situation-criticality research in sport, it also seems reasonable to suggest that the behavioral violations among basketball players reported by Bar-Eli and Tenenbaum (1988, 1989) that occurred during highly critical situations (e.g., charging, swearing,

shoving, assaulting the opponent without trying to get the ball) may have been a result of the players experiencing frustration and subsequently expressing their anger.

Hypotheses

A series of three hypotheses were proposed for the study.

1. It was hypothesized that Dunn et al.'s (in press) four-factor model perfectionism in sport would be replicated in a sample of competitive youth ice hockey players.
2. It was hypothesized that competitive youth ice hockey players with maladaptive perfectionist tendencies would be more predisposed to experiencing and expressing competitive trait and state anger than players with adaptive perfectionist tendencies.
3. It was hypothesized that, irrespective of perfectionism levels, players would experience higher levels of state anger following a mistake in competition in a high criticality situation than in a low criticality situation.

CHAPTER 3

Method

Participants

Participants were 229 male youth ice hockey players competing with 11 Pee Wee Tier I teams (n = 131; M age = 13.4 years), seven Bantam AA teams (n = 82; M age = 15.14 years), and one Bantam AAA team (n = 16; M age = 15.44 years) from a western Canadian province. For the combined sample, players ranged in age from 12.08 to 16.08 years (M age = 14.15 years; SD = 1.03) and had an average of 7.94 years of playing experience in organized competitive hockey (SD = 1.68). Data were collected from players of all positions, including centers (n = 44), wingers (n = 88), defensemen (n = 76), and goaltenders (n = 21).

Instruments

Participants were asked to complete five questionnaires; a demographic questionnaire, the Multidimensional Perfectionism Scale-Sport (MPS-Sport: Dunn et al., in press), and three scales from the State-Trait Anger Expression Inventory-2 (STAXI-2: Spielberger, 1999) designed to measure state and trait anger.

Demographic Questionnaire. The demographic questionnaire contained four items, and asked players questions about their age, current team, playing experience, and regular playing position. A copy of the demographic questionnaire that was used in this study is contained in Appendix A.

Multidimensional Perfectionism Scale-Sport (MPS-Sport). The MPS-Sport (Dunn et al., in press) is a sport-modified version of the Frost-MPS and was used to measure perfectionism in ice hockey. The original Frost-MPS (Frost et al., 1990) contains 35

items and measures perfectionism in six dimensions: Concern Over Mistakes (9 items), Doubts About Actions (4 items), Personal Standards (7 items), Parental Criticism (4 items), Parental Expectations (5 items), and Organization (6 items). Adequate levels of internal consistency across all subscales of the Frost-MPS have been reported by Frost et al. (1990), with coefficient alphas ranging from .77 to .93. Recent work by Hall et al. (1998) using the Frost-MPS in a sport context (119 high school cross country runners) also found adequate levels of internal consistency across five of the six subscales (all α's $\geq .70$). Only the doubts about actions subscale ($\alpha = .69$) did not reach the criterion standard of $\alpha = .70$ that is generally adopted by researchers.

Research has also established convergent validity evidence for the Frost-MPS. In a sample of 84 female undergraduate students, Frost et al. (1990) found a strong relationship between the Frost-MPS and various other measures of perfectionism. Composite scores on the Burns Perfectionism Scale (1990) positively correlated (r) with five subscales of the MPS (concern over mistakes = .87; personal standards = .53; parental expectations = .43; parental criticism = .42; doubts about actions = .47). In a sample of undergraduate students (N = 533), Frost et al. (1992) compared subscales of the Frost-MPS to subscales of the Hewitt-MPS (Hewitt & Flett, 1991). Results revealed positive correlations (r) between subscales of the Frost-MPS and self-oriented perfectionism (concern over mistakes = .38; personal standards = .62; parental expectations = .24; doubts about actions = .16; organization = .29), socially prescribed perfectionism (concern over mistakes = .49; personal standards = .16; parental expectations = .49; parental criticism = .49; doubts about actions = .28), and other-

oriented perfectionism (concern over mistakes = .22; personal standards = .33; parental expectations = .19). These results indicate strong convergent validity for the Frost-MPS.

Although the Frost-MPS has demonstrated acceptable reliability and validity properties, Dunn et al. (in press) modified the instrument to make it more contextually relevant to the competitive sport environment. More specifically, Dunn et al. developed the MPS-Sport (a sport specific version of the Frost-MPS) for use with high school aged football players. Many of the original Frost-MPS items were modified by Dunn et al. to reflect the sporting context under examination. To maintain face validity, Dunn et al. also excluded all items from the organization and doubts about actions subscales from the original Frost-MPS. However, Dunn et al. added eight items intended to measure two newly developed dimensions of perfectionism that were relevant to the competitive sport environment: Coach Expectations (e.g., "Only outstanding performance during competition is good enough for my coach") and Coach Criticism (e.g., "I feel like my coach criticizes me for doing things less than perfectly in competition").

Dunn et al. (in press) factor analyzed the data provided by 178 football players and obtained a four-factor solution. Items originally intended to measure coach expectations and coach criticism collapsed into a single factor that was labelled Perceived Coach Pressure (α = .76). The parental expectations and parental criticism items also collapsed to form one factor that was labelled Perceived Parental Pressure (α = .89). The remaining two factors labelled Concern Over Mistakes (α = .79) and Personal Standards (α = .79) reflected the original Frost-MPS subscales. The final 30-item four-factor inventory reported by Dunn et al. was employed in this study (see Appendix B).

The first subscale (Concern Over Mistakes) contains eight items (2, 7, 12, 21, 24, 27, 32, 34) designed to measure an athlete's tendency to perceive relatively minor flaws or mistakes in competition as catastrophic and unacceptable. The second subscale (Personal Standards) contains seven items (1, 6, 14, 16, 19, 28, 30) reflecting the importance that an athlete places on setting extremely high personal performance standards and goals in sport. The third subscale (Perceived Parental Pressure) contains nine items (3, 5, 8, 11, 15, 22, 25, 31, 33) reflecting an athlete's perceptions of parental expectations and parental criticism. The fourth subscale (Perceived Coach Pressure) contains six items (4, 10, 17, 23, 26, 29) that focus on an athlete's perceptions of coach expectations and coach criticism.

Respondents are asked to *'rate their general level of agreement'* on each item using a 5-point Likert scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree Nor Disagree; 4 = Agree; 5 = Strongly Agree. High composite subscale scores reflect high perfectionist tendencies on each dimension.

State-Trait Anger Expression Inventory-2 (STAXI-2). The STAXI-2 (Spielberger, 1999) measures the experience and expression of anger and was modified to assess players' levels of anger in ice hockey. The STAXI-2 is a 57-item self-report scale. The complete inventory contains six measurement scales (i.e., State Anger, Trait Anger, Anger Expression-In, Anger Expression-Out, Anger Control-In, Anger Control-Out). However, for the purposes of this study only the State Anger and Trait Anger subscales were used. The State Anger (S-Ang) scale contains 15 items (that are divided among three subscales) and measures the intensity of angry feelings at a particular time. The three S-Ang subscales are labelled Feeling Angry, Feel Like Expressing Anger Verbally,

and Feel Like Expressing Anger Physically. The feeling angry subscale contains five items (1, 2, 3, 6, 10) that measure the intensity of the angry feelings a person is experiencing at a particular time (e.g., "I would become furious with myself"). The feel like expressing anger verbally subscale contains five items (4, 9, 12, 13, 15) that measure the intensity of feelings related to the verbal expression of anger (e.g., "I would feel like swearing"). The third subscale, feel like expressing anger physically, contains five items (5, 7, 8, 11, 14) that measure the intensity of feelings related to the physical expression of anger (e.g., "I would feel like banging my stick").

To assess the influence of varying degrees of situation criticality on the experience and expression of S-Ang, two scenarios were generated to reflect low and high degrees of situation criticality in ice hockey. These scenarios were inserted at the beginning of the S-Ang scale. One scenario described a low criticality situation, and the other described a high criticality situation. The low criticality scenario stated, "With 5 minutes remaining in the **first period** of a tied game, you get a clear breakaway on the goalie. You successfully fake the goalie, but you miss the net on the shot." The high criticality scenario stated, "With 5 minutes remaining in the **third period** of a tied game, you get a clear breakaway on the goalie. You successfully fake the goalie, but you miss the net on the shot." After reading a scenario, players then responded to the 15 items contained within the S-Ang subscale. Players were asked to rate *'how they would most likely feel at that moment during competition'* in response to the mistake using a 4-point Likert scale: 1 = Not at All; 2 = Somewhat; 3 = Moderately So; 4 = Very Much So.

The Trait Anger (T-Ang) scale contains 10 items that measure an individual's dispositional tendency to experience anger. The 10 items are divided into two subscales

labelled Angry Temperament and Angry Reaction. The angry temperament subscale contains four items (1, 2, 3, 6) that measure an individual's tendency to experience anger without any particular provocation or stimulus. The angry reaction subscale contains six items (4, 5, 7, 8, 9, 10) that measure the frequency of angry feelings experienced in situations that involve frustration and/or negative evaluations (e.g., sensitive to criticism, perceived affronts, and negative evaluation by others). Items 7 and 9 are not scored due to small factor loadings found in previous research (Spielberger, 1999). The original STAXI-2 response options for the T-Ang scale are on a 4-point scale: 1 = Almost Never; 2 = Sometimes; 3 = Often; 4 = Almost Always. However, for this study, players were asked to rate *'how they would generally describe themselves as a hockey player'* on a 5-point scale: 1 = Not at All Like Me; 2 = A Little Like Me; 3 = Somewhat Like Me; 4 = Quite Like Me; 5 = Very Much Like Me. Higher composite subscale scores reflect higher levels of anger on each state and trait dimension that was measured.

To create an anger scale relevant to the sport of ice hockey, six of the original STAXI-2 items were modified to reflect the sporting context under examination. Original S-Ang items (i.e., "I feel like breaking something" and "I feel like banging something") were respectively re-written as "I feel like breaking my stick" and "I feel like banging my stick". Similarly, original T-Ang items (i.e., "I am a hotheaded person", "I get angry when slowed down by others' mistakes", "I feel annoyed when I am not given recognition for doing good work" and "It makes me furious when I am criticized in front of others") were respectively re-written as "I am a hotheaded competitor", "I get angry when my play suffers as a result of my teammates' mistakes", "I feel annoyed

when I'm not given recognition for playing well" and "It makes me furious when I'm criticized in front of other players".

Although the first version of the STAXI-2 (i.e., STAXI: Spielberger, 1988) has undergone rigorous psychometric validation (e.g., Bartz, Blume, & Rose, 1996; Eid, Emmermann, & Schwenkmezger, 1996; Everson, Goldberg, Kaplan, Julkunen, & Salonen, 1998; Fischer, Smith, Leonard, Fuqua, Campbell, & Masters, 1993; Forgays, Spielberger, Ottaway, & Forgays, 1998; Fuqua, Leonard, Masters, Smith, Campbell, & Fischer, 1991; Laude, Girard, Consoli, Mounier-Vehier, & Elghozi, 1997), empirical validation studies of the STAXI-2 are not prevalent in the literature as yet. However, the professional manual for the STAXI-2 (Spielberger, 1999) provides strong evidence for its reliability and validity. For example, internal consistencies (coefficient alpha) for the six STAXI-2 scales ranged from .76 to .92 for females, and .73 to .94 for males among a sample of 1644 normal adults. At the time of this investigation, no research had employed the STAXI-2 in a sport/exercise setting.

Convergent validity of the STAXI-2 was also reported by Spielberger (1999). In a sample of 280 college students, T-Ang scores from the STAXI-2 significantly correlated with total scores on the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957) (males: $r = .71$, $p < .001$; females: $r = .66$, $p < .001$). Data provided by a sample of Navy recruits ($N = 270$) also revealed similar results (males: $r = .66$, $p < .001$; females: $r = .73$, $p < .001$).[1]

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[1] Given the copyright laws that govern the use and publication of the STAXI-2 (and any related variants), a copy of the instrument used in this study cannot be presented in the Appendices.

Procedure

Content relevance assessment. Given that the researcher developed the two scenarios included in the S-Ang scales, it was necessary to assess their *content-relevance*. Content relevance is defined as "the degree to which the content (or subject matter) contained within a test item is representative of the 'targeted construct' that the item is designed to measure" (Dunn, Bouffard, & Rogers, 1999, p. 16). In the context of this study, content relevance relates to the degree to which the two scenarios appear to represent different points of the situation criticality continuum. The intention of the researcher was to create one scenario that would reflect a high criticality situation, and one scenario that would reflect a low criticality situation. Before the scenarios were included in the S-Ang scales, fourteen prospective judges were contacted to determine their willingness to participate on a panel of content-specialists to rate the degree of situation criticality in the two scenarios (12 sport psychologists and 2 head coaches of intercollegiate hockey teams). Content-assessment forms (Appendix C) were electronically mailed (or hand delivered in some instances) to the prospective judges. Six of the 12 sport psychologists and both head coaches agreed to participate in the study and returned their assessments within 2 days of the original mailing/delivery. All of the sport psychologists had a PhD in sport psychology (or a closely related discipline). All had published in international refereed sport psychology journals, and at that time of the study were working in physical education or kinesiology related departments at Canadian universities. The two coaches were both head coaches of their respective Canadian university hockey teams.

Athlete solicitation and inventory administration. Permission to conduct the study was granted by the Faculty of Physical Education and Recreation Research Ethics Committee in December, 2001. Permission to conduct the study was granted by the Canadian Hockey Association (the chief governing body for amateur hockey in the country). Permission was then obtained from the appropriate provincial sport governing body for amateur hockey in the province, and the city-wide hockey organization that governed hockey in the city in which all teams participated. The head coaches of the respective teams were contacted via telephone or electronic mail and informed of the general intent and purpose of the study. After agreeing to participate in the study, a mutually suitable time to collect data was determined. All data collection took place either immediately before or after training sessions at various ice arenas throughout the city. On one occasion, data collection took place at a team's clubhouse before their monthly team meeting. Data was collected at mid-season for all teams.

Before administering the questionnaires, parents were informed about the study (both verbally and in writing) and signed parental consent forms. Players were briefed on the nature and intent of the research study at the time of test administration. They were further informed that participation was voluntary and that they had the right to withdraw from the study at any time, without consequence. The researcher also informed players that all information provided on the questionnaires would remain confidential, and neither coaches nor parents would have access to the individual data sets. Written consent was also obtained from the players at this time.

To prevent any presentation order effect biasing the data, the presentation order of the four questionnaires was counterbalanced using eight possible presentation orders. The

names of the inventories (i.e., MPS-Sport, STAXI-2) were changed to avoid potential response biases. Whenever possible, players were seated at suitable distances from each other and encouraged to refrain from conversing with the other players in the room. All players completed the demographic questionnaire first. Coaches and parents were not in the room at the time of data collection, however, as recommended by Henschen (1991) the dressing room/meeting room door was left ajar in all instances.

CHAPTER 4

Results

Content Relevance Assessment

Using a 10-point rating scale ranging from 1 (Low Criticality) to 10 (High Criticality), the panel of eight expert judges rated the degree of situation criticality associated with each of the two ice hockey scenarios that were generated for inclusion in the S-Ang scales. A dependent sample t-test was conducted to determine if the judges' ratings of situation criticality for the two scenarios differed. Results revealed a statistically significant difference in situation criticality, $t(7) = 12.33$, $p < .001$, between scenario 1 (low criticality: $M = 4.0$; $SD = 1.07$) and scenario 2 (high criticality: $M = 8.6$; $SD = .74$). A very large effect size index (ES) for dependent means (Cohen, 1977) was obtained ($ES = 5.03$).

Psychometric Analyses

Perfectionism. Given the relative infancy of the MPS-Sport as a sport specific measure of perfectionism, and due to the differences in characteristics between this sample and those in Dunn et al.'s scale-construction paper (i.e., high school football players), exploratory factor analysis (EFA) was used to analyze the latent structure of the MPS-Sport. The MPS-Sport data were subjected to a principal axes factor analysis with direct oblimin rotation ($\delta = 0$). A factor loading of $|.30|$ served as the lower bound for item retention (Gorsuch, 1983). Ten factors were extracted with eigenvalues (λ) greater than 1.0, although the scree plot (Cattell, 1978) suggested the retention of four factors. Given the lack of interpretability of the 10-factor solution following rotation, the four-

factor solution was subsequently retained. The four factors accounted for 45.77% of the total item variance.

Twenty-six of the 30 items in the four-factor solution (see Appendix D) demonstrated excellent simple structure (i.e., high loading on one factor, low loading on all other factors: Thurstone, 1947). Of the four items that lacked simple structure, two had loadings (< .40) on one factor. Only one item had factor loadings >.50 on two factors. The four items that lacked simple structure were subsequently deleted (cf. Dunn et al., in press) and another principal axes analysis was conducted on the remaining 26 items. The final 26-item four-factor solution (following direct oblimin rotation) is contained in Table 1. All items had excellent simple structure.

Factor 1 contained eight items that measure a player's tendency to perceive relatively minor flaws or mistakes in competition as catastrophic and unacceptable. These items reflected a player's Concern Over Mistakes (COM) perfectionism. Factor 2 contained seven items that measure the importance a player places on setting extremely high personal performance standards and goals in sport. This factor reflected a player's Personal Standards (PS) perfectionism. Factor 3 contained six items that measured Perceived Parental Pressure (PPP) perfectionism which reflects a player's perceptions of parental expectations and parental criticism in sport. Factor 4 contained five items that measured a player's perceptions of coach expectations and coach criticism and was labelled Perceived Coach Pressure (PCP) perfectionism in accordance with Dunn et al.'s (in press) label. Interfactor correlations were low to moderate among the resultant MPS-Sport factors ($r_{1.2}$ = .24; $r_{1.3}$ = -.34; $r_{1.4}$ = .36; $r_{2.4}$ = .13; $r_{3.4}$ = -.19). These factors directly

correspond to the four factors identified by Dunn et al. in their original investigation of the latent structure of the MPS-Sport with football players.

Internal consistency coefficients using Cronbach's (1951) coefficient alpha were computed for all perfectionism subscales. MPS-Sport internal consistency coefficients were as follows: COM (α = .78), PS (α = .76), PPP (α = .76), PCP (α = .67). Given that alpha for the perceived coach pressure subscale was below the .70 'acceptability criteria' that is normally adopted by researchers, further results pertaining to the perceived coach pressure subscale should be interpreted with some degree of caution.

State anger. Goaltender data (n = 21) were excluded from all S-Ang analyses because players in this position are prevented from experiencing the two hockey scenarios presented in these scales. Therefore, only data from centers, wingers, and defensemen were included (n = 208) in the analyses. A review of literature suggested that the STAXI-2 had yet to be used in a youth sport context. Because six of the items were modified to reflect the sporting context under examination (i.e., competitive youth ice hockey), exploratory factor analysis was again used to examine the latent structure of the instrument. Both S-Ang scales utilized in this study (i.e., low criticality and high criticality) were independently subjected to principal axes factor analyses and rotated to an oblique solution (Promax: κ = 4). The decision to use Promax rotation was based upon previous literature examining the factor structure of the STAXI (Forgays et al., 1998) where Promax rotation was used. A factor loading of $|.30|$ again served as the lower bound for item retention (Gorsuch, 1983).

Table 1

Pattern Coefficients from Principal Axes Analysis of the MPS-Sport

Item[a]	Full Item Description	F1	F2	F	F4
32.	People will probably think less of me if I make mistakes in competition.	**.63**	-	-	-
34.	If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance.	**.53**	-	-	-
7.	If I fail in competition, I feel like a failure as a person.	**.52**	-	-	-
24.	If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I have failed to some degree.	**.51**	-	-	-
27.	If I do not do well all the time in competition, I feel that people will not respect me as an athlete.	**.49**	-	-	-
21.	I should be upset if I make a mistake in competition.	**.47**	-	-	-
2.	Even if I fail slightly in competition, for me, it is as bad as being a complete failure.	**.46**	-	-	-
12.	The fewer mistakes I make in competition, the more people will like me.	**(.29)**	-	-	-
16.	I think I expect higher performance and greater results in my daily sport-training than most players.	-	**.70**	-	-
30.	I set higher achievement goals than most athletes who play my sport.	-	**.69**	-	-
28.	I have extremely high goals for myself in my sport.	-	**.67**	-	-
6.	I hate being less than the best at things in my sport.	-	**.51**	-	-
19.	I feel that other players generally accept lower standards for themselves in sport than I do.	-	**.47**	-	-
14.	It is important to me that I be thoroughly competent in everything I do in my sport.	-	**.40**	-	-
1.	If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player.	-	**.36**	-	-

Table 1 Continued

Item[a]	Full Item Descriptions	F1	F2	F3	F4
22.	In competition, I never feel like I can quite live up to my parents' standards.	-	-	**.80**	-
5.	In competition, I never feel like I can quite meet my parents' expectations.	-	-	**.70**	-
15.	I feel like I am criticized by my parents for doing things less than perfectly in competition.	-	-	**.60**	-
11.	My parents have always had higher expectations for my future in sport than I have.	-	-	**.41**	-
8.	Only outstanding performance during competition is good enough in my family.	-	-	**.38**	-
31.	I feel like my parents never try to fully understand the mistakes I sometimes make in competition.	-	-	**.36**	-
17.	I feel like I can never quite live up to my coach's standards.	-	-	-	**.79**
4.	I feel like my coach criticizes me for doing things less than perfectly in competition.	-	-	-	**.61**
29.	I feel like my coach never tries to fully understand the mistakes I sometimes make.	-	-	-	**.44**
10.	Only outstanding performance during competition is good enough for my coach.	-	-	-	**.40**
26.	My coach expects excellence from me at all times: both in training and in competition.	-	-	-	**.39**

Note. Direct oblimin transformation: Delta = 0. Factor 1 = Concern Over Mistakes; Factor 2 = Personal Standards; Factor 3 = Perceived Parental Pressure; Factor 4 = Perceived Coach Pressure. Factor pattern loadings < |.30| are not shown.

[a] To ensure comparison with the MPS-Sport items reported by Dunn et al. (in press), all items have their original number specification ranging from 1 to 34.

Initial principal axes analysis of the low criticality S-Ang scale (Appendix E) extracted three factors with eigenvalues (λ) greater than 1.0 ($\lambda_1 = 7.77$, $\lambda_2 = 1.48$, $\lambda_3 = 1.03$). Although the scree plot (Cattell, 1978) suggested the retention of two factors, examination of the rotated pattern matrices revealed that a three-factor solution was more interpretable. The three factors accounted for 68.53% of the total item variance.

The first factor contained seven items that measured the intensity of angry feelings a player experiences at one particular time and was labelled Feeling Angry (FA). Five of the seven items on this factor (i.e., items 1, 2, 3, 6, 10) originally loaded on Spielberger's (1999) feeling angry subscale. However, items 5 and 7 originally loaded on Spielberger's feel like expressing anger physically subscale. Nevertheless, these two items were retained in the first factor because of their excellent simple structure.

Factor 2 contained four items, three of which (i.e., items 8, 11, 14) originally loaded on Spielberger's feel like expressing anger physically subscale. The fourth item on this factor (i.e., Item 4) originally loaded on Spielberger's feel like expressing anger verbally subscale. However, all items were retained in this factor on the basis of their strong factor loadings and simple structure. Given that the expression of anger in each of the four items was directed at someone, this factor was subsequently labelled, Feel Like Expressing Anger At Someone (FLEAAS).

The third factor contained four items that all loaded on Spielberger's original feel like expressing anger verbally subscale. Subsequently, this factor was labelled, Feel Like Expressing Anger Verbally (FLEAV). Interfactor correlations were moderate to strong: $r_{1.2} = .62$; $r_{1.3} = .74$; $r_{2.3} = .67$. Internal consistency coefficients were computed using Cronbach's (1951) coefficient alpha. All low criticality S-Ang internal consistency

coefficients were > .70 indicating acceptable levels of internal consistency: FA (α = .90), FLEAAS (α = .85), FLEAV (α = .86).

The initial principal axes analysis of the high criticality S-Ang scale (Appendix F) extracted three factors with eigenvalues (λ) greater than 1.0 (λ_1 = 7.49, λ_2 = 1.76, λ_3 = 1.15). The scree plot (Cattell, 1978) also suggested the retention of three factors. The three factors accounted for 69.31% of the total item variance.

The first factor contained six items that measured the intensity of angry feelings a player experiences at one particular time and was labelled, Feeling Angry (FA). Five of the six items on this factor (i.e., Items 1, 2, 3, 6, 10) originally loaded on Spielberger's (1999) feeling angry subscale. However, Item 7 originally loaded on Spielberger's feel like expressing anger physically subscale. Nevertheless, this item was retained in the first factor because of its excellent simple structure.

Factor 2 contained five items, four of which (i.e., items 7, 8, 11, 14) originally loaded on Spielberger's feel like expressing anger physically subscale. The fifth item on this factor (i.e., Item 4) originally loaded on Spielberger's feel like expressing anger verbally subscale. Given that the expression of anger in four of the five items was directed at someone, this factor was subsequently labelled, Feel Like Expressing Anger At Someone (FLEAAS).

The third factor was comprised of four items that all loaded on Spielberger's original feel like expressing anger verbally subscale. Again, this factor was labelled, Feel Like Expressing Anger Verbally (FLEAV). Interfactor correlations were moderate to strong: $r_{1.2}$ = .72; $r_{1.3}$ = .53; $r_{2.3}$ = .60. All high criticality S-Ang internal consistency

coefficients were > .70 indicating acceptable levels of internal consistency: FA (α = .89), FLEAAS (α = .87), FLEAV (α = .87).

Upon examination of the two pattern matrices for the low and high criticality scenarios (see Appendices E and F respectively), it was apparent that Item 5 (i.e., "Feel like breaking my stick) measured a different construct in the high criticality situation (i.e., FA) than in the low criticality situation (i.e., FLEAAS). This item was therefore deleted from both data sets and independent EFAs were again conducted on the two 14-item scales.

The principal axes analysis of the low criticality S-Ang data extracted three factors with eigenvalues (λ) greater than 1.0 (λ_1 = 7.16, λ_2 = 1.48, λ_3 = 1.03). Although the scree plot (Cattell, 1978) suggested the retention of two factors, interpretability of the rotated pattern matrices was much clearer in the three-factor solution. The three factors accounted for 69.09% of the total item variance. Following the Promax rotation, excellent simple structure was observed across all 14 items (see Table 2). All items from the original 15-item low criticality EFA loaded on the same factors in the 14-item solution. Each factor in the 14-item solution subsequently maintained the same label that it was assigned in the 15-item solution: F1 (feeling angry), F2 (feel like expressing anger at someone), F3 (feel like expressing anger verbally).

Interfactor correlations were moderate to strong: $r_{1.2}$ = .58; $r_{1.3}$ = .72; $r_{2.3}$ = .64. All low criticality S-Ang subscale internal consistency coefficients (α) were > .70 indicating acceptable levels of internal consistency: FA (α = .89), FLEAAS (α = .85), FLEAV (α = .86).

The principal axes analysis of the 14-item high criticality S-Ang scale with Item 5 removed extracted three factors with eigenvalues (λ) greater than 1.0 ($\lambda_1 = 7.00$, $\lambda_2 = 1.74$, $\lambda_3 = 1.15$). The scree plot (Cattell, 1978) also suggested the retention of three factors. The three factors accounted for 70.63% of the total item variance. Following the Promax rotation, excellent simple structure was observed across all 14 items (see Table 3). All items from the original 15-item high criticality EFA loaded on the same factors in the 14-item solution. Each factor in the 14-item solution subsequently maintained the same label that it was assigned in the 15-item solution: F1 (feeling angry), F2 (feel like expressing anger at someone), F3 (feel like expressing anger verbally).

Interfactor correlations were moderate to strong: $r_{1.2} = .71$; $r_{1.3} = .51$; $r_{2.3} = .57$. All low criticality S-Ang internal consistency coefficients (α) were > .70 indicating acceptable levels of internal consistency: FA ($\alpha = .89$), FLEAAS ($\alpha = .87$), FLEAV ($\alpha = .87$). The latent dimensionality of the final 14-item S-Ang solutions contained in Tables 2 and 3 was used for all subsequent data analyses.

Trait anger. Because four of the items on the STAXI-2 T-Ang scale were modified to reflect the sporting context under examination (i.e., competitive youth ice hockey), exploratory factor analysis was again used to examine the latent structure of the scale. The T-Ang scale utilized in this study was subjected to principal axes factor analysis and rotated to an oblique solution (Promax: $\kappa = 4$). The decision to use Promax rotation was again based upon previous literature examining the factor structure of the STAXI (Forgays et al., 1998) where Promax rotation was used. A factor loading of $|.30|$ again served as the lower bound for item retention (Gorsuch, 1983).

Table 2

Pattern Coefficients from Principal Axes Analysis of the Low Criticality State Anger Scale with Item 5 Removed

Item	Item Descriptions	F1	F2	F3
10.	Feel annoyed.	**.88**	-	-
2.	Feel irritated.	**.81**	-	-
6.	Feel mad.	**.71**	-	-
3.	Feel angry.	**.71**	-	-
1.	Become furious with myself.	**.69**	-	-
7.	Feel like banging my stick.	**.33**	-	-
11.	Feel like hurting someone.	-	**.98**	-
14.	Feel like pounding someone.	-	**.76**	-
8.	Feel like hitting someone.	-	**.77**	-
4.	Feel like yelling at somebody.	-	**.41**	-
12.	Feel like cursing out loud.	-	-	**.95**
9.	Feel like swearing.	-	-	**.85**
15.	Feel like shouting out loud.	-	-	**.66**
13.	Feel like screaming.	-	-	**.46**

Note. N = 208 (Goaltender data are excluded). Factor 1 = Feeling Angry; Factor 2 = Feel Like Expressing Anger At Someone; Factor 3 = Feel Like Expressing Anger Verbally. Factor pattern loadings < |.30| are not shown.

Table 3

Pattern Coefficients from Principal Axes Analysis of the High Criticality State Anger Scale with Item 5 Removed

Item	Item Descriptions	F1	F2	F3
10.	Feel annoyed.	.91	-	-
2.	Feel irritated.	.88	-	-
6.	Feel mad.	.71	-	-
3.	Feel angry.	.69	-	-
1.	Become furious with myself.	.66	-	-
7.	Feel like banging my stick.	.44	-	-
8.	Feel like hitting someone.	-	.92	-
14.	Feel like pounding someone.	-	.89	-
11.	Feel like hurting someone.	-	.85	-
4.	Feel like yelling at somebody.	-	.40	-
12.	Feel like cursing out loud.	-	-	.93
9.	Feel like swearing.	-	-	.81
15.	Feel like shouting out loud.	-	-	.80
13.	Feel like screaming.	-	-	.40

Note. N = 208 (Goaltender data are excluded). Factor 1 = Feeling Angry; Factor 2 = Feel Like Expressing Anger At Someone; Factor 3 = Feel Like Expressing Anger Verbally. Factor pattern loadings < |.30| are not shown.

Principal axes analysis of the T-Ang scale extracted two factors with eigenvalues (λ) greater than 1.0 ($\lambda_1 = 3.33$, $\lambda_2 = 1.67$). The scree plot (Cattell, 1978) also suggested the retention of two factors. A highly interpretable pattern matrix with excellent simple structure (Thurstone, 1947) across all items emerged (see Table 4). The two factors accounted for 62.49% of the total item variance. To be consistent with the STAXI-2 Professional Manual, items 7 and 9 were not included in the T-Ang subscales due to their poor factor loadings in previous research (Spielberger, 1999).

Table 4

Pattern Coefficients from Principal Axes Analysis of the Trait Anger Scale

Item	Item Descriptions	F1	F2
2.	I have a fiery temper.	.93	-
1.	I am quick tempered.	.84	-
6	I have a tendency to "fly off the handle".	.63	-
3.	I am a hotheaded competitor.	.61	-
5.	I feel annoyed when I'm not given recognition for playing well.	-	.74
8.	It makes me furious when I'm criticized in front of others.	-	.67
10.	I feel infuriated when I play well but get a poor evaluation.	-	.60
4.	I get angry when my play suffers as a result of my teammates' mistakes.	-	.48

Note. N = 208 (Goaltender data are excluded). Factor 1 = Angry Temperament; Factor 2 = Angry Reaction. Factor pattern loadings < | .30 | are not shown.

The first factor contained four items that measured the disposition to experience anger without specific provocation and was labelled Angry Temperament (AT). All four items on this factor (i.e., items 1, 2, 3, 6) originally loaded on Spielberger's (1999) angry temperament subscale. Factor 2 contained four items that measured the frequency of angry feelings experienced in situations that involve frustration and/or negative evaluations, and was labelled Angry Reaction (AR). All four items on this factor (i.e., items 4, 5, 8, 10) originally loaded on Spielberger's angry reaction subscale. The interfactor correlation was moderate ($r_{1.2} = .36$). Internal consistency coefficients were computed using Cronbach's (1951) coefficient alpha. Both T-Ang internal consistency coefficients were > .70 indicating acceptable levels of internal consistency: AT ($\alpha = .83$), AR ($\alpha = .73$).

Relationships Between the MPS-Sport and STAXI-2 Subscale Scores

Descriptive statistics (i.e., M and SD) and Pearson product moment correlations (r) for all subscales are respectively presented in Tables 5 and 6. For the remainder of all data analyses, goaltenders are excluded from the data set.

Table 5

Descriptive Statistics for Perfectionism and Anger Subscales

Subscale	No. of Items	M	SD
Perfectionism [a]			
Personal standards	7	25.39	4.62
Concern over mistakes	8	22.88	5.53
Perceived parental pressure	6	14.43	4.30
Perceived coach pressure	5	13.86	3.39
S-Ang low criticality [b]			
Feeling angry	6	16.27	4.67
Feel like expressing anger verbally	4	9.50	3.72
Feel like expressing anger at someone	4	7.77	3.58
S-Ang high criticality [b]			
Feeling angry	6	18.61	4.54
Feel like expressing anger verbally	4	10.87	3.80
Feel like expressing anger at someone	4	8.90	3.93
T-Ang [c]			
Angry temperament	4	9.38	3.59
Angry reaction	4	11.06	3.77

Note. N = 208 (Goaltender data are excluded).

[a] Items scored on a 5-point scale (1 = Strongly Disagree; 5 = Strongly Agree). [b] Items scored on a 4-point scale (1 = Not At All; 4 = Very Much So). [c] Items scored on a 5-point scale (1 = Not At All Like Me; 5 = Very Much Like Me).

Table 6

Correlations (r) Among all Perfectionism and Anger Measures

Subscales	1	2	3	4	5	6	7	8	9	10	11	12
1. PS	-	-	-	-	-	-	-	-	-	-	-	-
2. COM	.30****	-	-	-	-	-	-	-	-	-	-	-
3. PPP	.08	.45****	-	-	-	-	-	-	-	-	-	-
4. PCP	.14*	.41****	.25****	-	-	-	-	-	-	-	-	-
5. LC-FA	.05	.30****	.07	.23***	-	-	-	-	-	-	-	-
6. LC-FLEAV	.03	.21***	.08	.19**	.69****	-	-	-	-	-	-	-
7. LC-FLEAAS	-.12	.16*	.10	.19**	.59****	.62****	-	-	-	-	-	-
8. HC-FA	.05	.23***	.05	.12	.68****	.52****	.35****	-	-	-	-	-
9. HC-FLEAV	.13	.31****	.15*	.19**	.59****	.76****	.47****	.67****	-	-	-	-
10. HC-FLEAAS	-.03	.19**	.12	.17*	.45****	.42****	.42****	.51**	.54****	-	-	-
11. AT	.12	.24***	.14*	.16*	.37****	.43****	.38****	.36****	.48****	.40****	-	-
12. AR	.20***	.36****	.28****	.34****	.44****	.31****	.22**	.38****	.37****	.22**	.34****	-

* $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

PS = Personal Standards, COM = Concern Over Mistakes, PPP = Perceived Parental Pressure, PCP = Perceived Coach Pressure, FA = Feeling Angry, FLEAV = Feel Like Expressing Anger Verbally, FLEAAS = Feel Like Expressing Anger At Someone, AT = Angry Temperament, AR = Angry Reaction, LC = Low Criticality, HC = High Criticality.

Establishing Perfectionism Profiles

Following the same analytic protocol adopted by Parker (1997) in his study of perfectionism among academically gifted school children, a hierarchical cluster analysis (using Ward's method and squared Euclidean distances) was conducted upon the perfectionism data provided by the 208 hockey players (excluding goaltenders). The intent of this analytic technique is to give the researcher the opportunity to consider scores across all MPS-Sport subscales simultaneously when identifying "profiles" of perfectionist orientations. In other words, the cluster analysis attempted to find clusters of players who had relatively similar profiles of perfectionism scores across the four MPS-Sport subscales.

Ward's method of cluster extraction was chosen because it has a tendency to produce clusters that are approximately equal in size (Hair, Anderson, Tatham, & Black, 1998). In accordance with Hair et al., the agglomeration schedule (see Appendix G) was examined to determine the number of clusters present in the data. The agglomeration schedule defines the cluster solution "when the similarity measure exceeds a specified value, or when the successive values between steps makes a sudden jump" (Hair et al., p. 499). When a value makes a sudden jump, it is indicative of a substantial decrease in similarity between clusters. This 'stopping rule' is considered to be an adequate indicator of cluster identification (Hair et al.). As seen in Appendix G, a large jump in the agglomeration coefficient at stage 204 suggested the retention of four clusters. Further visual analyses of the dendrogram (Appendix H) also suggested the retention of four clusters. Descriptive statistics for the four MPS-Sport subscales across the four clusters are provided in Table 7.

Table 7

Means and Standard Deviations for MPS-Sport Subscales Across Four Clusters

	Cluster 1 [a]		Cluster 2 [b]		Cluster 3 [c]		Cluster 4 [d]	
MPS-Sport Subscales	M	SD	M	SD	M	SD	M	SD
Concern over mistakes	29.6	2.9	21.6	2.8	25.2	2.9	6.5	3.0
Personal standards	29.6	4.2	25.0	3.6	23.6	2.4	23.4	5.1
Perceived parental pressure	17.3	4.4	16.7	3.0	12.8	1.9	10.2	2.6
Perceived coach pressure	16.0	3.0	13.5	2.3	14.7	3.5	11.7	3.5

[a] $n = 48$, [b] $n = 67$, [c] $n = 41$, [d] $n = 52$

Visual inspection of the MPS-Sport subscale scores across the four clusters (see Table 7) shows that Cluster 1 had the highest mean scores across all four subscales. In contrast, Cluster 4 had the lowest mean scores across all four subscales. Cluster 2 had the second highest personal standards and perceived parental pressure means subscale scores, whereas Cluster 3 had the second highest concern over mistakes and perceived coach pressure mean subscale scores.

To determine if perfectionism profiles (i.e., cluster groups) differed as a function of T-Ang and S-Ang levels, three separate MANOVAs were conducted. In the first MANOVA, the two T-Ang subscale scores were entered as dependent variables. In the second MANOVA, the three low criticality S-Ang subscale scores were entered as

dependent variables. In the third MANOVA, the three high criticality S-Ang subscale-scores were entered as dependent variables. For each analysis, the four perfectionism clusters acted as the independent variable. Significant multivariate effects were followed up with univariate F-tests. Significant F-tests were followed up by post-hoc independent t-tests (n = 6) with Bonferroni corrections. Effect sizes (ES) using Cohen's (1977) index for independent means were computed for each significant t-test. Descriptive statistics (M and SD) for the anger subscales across the four clusters are contained in Table 8.

The multivariate test of between-cluster differences for T-Ang was significant (Wilks' $\Lambda = .831$, $F\ [6, 406] = 6.554$, $p < .001$). Significant F-tests for both angry temperament ($F\ [3, 204] = 4.635$, $p < .01$) and angry reaction ($F\ [3, 204] = 12.1$, $p < .001$) were also obtained. Results of significant post hoc t-tests for both T-Ang subscales and corresponding effect sizes are shown in Table 9. Results showed that players in Cluster 1 were more likely to be predisposed to experiencing anger without specific provocation (i.e., angry temperament) than players in Clusters 4 and 2. Furthermore, players in Cluster 1 were more likely to experience angry feelings due to frustration and/or negative evaluations (i.e., angry reaction) than players in Clusters 2, 3, and 4.

The multivariate test of between-cluster differences for low criticality S-Ang was significant (Wilks' $\Lambda = .853$, $F\ [9, 491] = 3.68$, $p < .001$). Significant F-tests for both feeling angry ($F\ [3, 204] = 7.740$, $p < .01$) and feel like expressing anger verbally ($F\ [3, 204] = 2.665$, $p < .05$) were also obtained. A non significant F-test was obtained for feel like expressing anger at someone ($F\ [3, 204] = 2.154$, $p = .095$). Results of significant post hoc t-tests for the low criticality S-Ang subscales and corresponding effect sizes are shown in Table 10. Results showed that players in Cluster 1 experienced more intense

feelings of anger than players in Clusters 2 and 4. Although the post-hoc independent t-test did not indicate any significant differences for the feel like expressing anger verbally subscale, the difference between Clusters 1 and 4 approached significance.

Table 8

Trait and State Anger Means and Standard Deviations Across Clusters

	Cluster 1 [a]		Cluster 2 [b]		Cluster 3 [c]		Cluster 4 [d]	
STAXI-2 Anger Subscales	M	SD	M	SD	M	SD	M	SD
T-Ang								
AT	10.93	.50	9.03	.43	9.32	.55	8.44	.49
AR	13.35	.51	10.81	.43	11.17	.55	9.16	.49
S-Ang low criticality								
FA	18.38	.64	15.49	.54	17.34	.70	14.52	.69
FLEAV	10.41	.53	9.19	.45	10.12	.57	8.56	.51
FLEAAS	7.67	.51	7.91	.43	8.76	.56	6.89	.49
S-Ang high criticality								
FA	20.25	.64	18.37	.55	18.63	.70	17.39	.62
FLEAV	12.65	.53	10.73	.45	10.63	.57	9.60	.51
FLEAAS	9.48	.56	9.13	.47	9.48	.61	7.60	.54

[a] n = 48, [b] n = 67, [c] n = 41, [d] n = 52

AT = Angry Temperament, AR = Angry Reaction, FA = Feeling Angry, FLEAV = Feel Like Expressing Anger Verbally, FLEAAS = Feel Like Expressing Anger At Someone

Table 9

Significant Independent t-tests Comparing Mean Subscale Scores on Two Trait Anger Dimensions Across Perfectionism Clusters

Cluster Comparisons	Mean Difference	t	df	p	ES [a]
Angry temperament					
C1-C4	2.49	3.283	98	< .01	.66
C1-C2	1.91	3.066	113	< .05	.58
Angry reaction					
C1-C4	4.19	5.942	98	< .001	1.19
C1-C2	2.55	3.682	113	< .001	.69
C1-C3	2.18	2.766	87	< .01	.59
C3-C4	2.01	2.922	91	< .01	.61

Note. C1 = Cluster 1; C2 = Cluster 2; C3 = Cluster 3; C4 = Cluster 4

[a] $ES = (M_1 - M_2)/SD_{pooled}$ (see Thomas, Salazar, & Landers, 1991)

The multivariate test of between-cluster differences for high criticality S-Ang was significant (Wilks' $\Lambda = .895$, F [9, 491] = 2.551, $p < .01$). Significant F-tests for both feeling angry (F [3, 204] = 3.535, $p < .05$), feel like expressing anger verbally (F [3, 204] = 5.909, $p < .01$), and feel like expressing anger at someone (F [3, 204] = 2.701, $p < .05$) were also obtained. Results of significant post hoc t-tests for the high criticality S-Ang subscales and corresponding effect sizes are shown in Table 11. Results suggested

Table 10.

Significant Independent t-tests Comparing Mean Subscale Scores on Low Criticality State Anger Dimensions Across Perfectionism Clusters

Cluster Comparisons	Mean Difference	t	df	p	ES [a]
Feeling angry					
C1-C4	3.86	4.45	98	< .001	.88
C1-C2	2.90	3.564	113	< .01	.67
Feel like expressing anger verbally					
C1-C4	1.85	2.484	98	= .07	.50

Note. C1 = Cluster 1; C2 = Cluster 2; C3 = Cluster 3; C4 = Cluster 4

[a] $ES = (M_1 - M_2)/SD_{pooled}$ (see Thomas et al., 1991)

that players in Cluster 1 experienced more intense feelings of verbal anger than players in Clusters 2 and 4. Although the post-hoc independent t-test did not indicate any significant differences for the feel like expressing anger at someone subscale, further analysis of Clusters 1 and 4 revealed a difference between the two clusters that approached significance.

Table 11.

Significant Independent t-tests Comparing Mean Subscale Scores on High Criticality State Anger Dimensions Across Perfectionism Clusters

Cluster Comparisons	Mean Difference	t	df	p	ES[a]
Feeling angry					
C1-C4	2.87	3.195	98	< .01	.64
Feel like expressing anger verbally					
C1-C4	3.05	4.274	98	< .001	.85
C1-C2	1.92	3.068	113	< .01	.58
Feel like expressing anger at someone					
C1-C4	1.88	2.44	98	= .09	.49

Note. C1 = Cluster 1; C2 = Cluster 2; C3 = Cluster 3; C4 = Cluster 4

[a] $ES = (M_1 - M_2)/SD_{pooled}$ (see Thomas et al., 1991)

Based on the mean subscale scores on the MPS-Sport, and the T-Ang and S-Ang scales, the cluster groups were classified accordingly. Cluster 1 contained 48 players whose perfectionism profile consisted of high scores across all MPS-Sport subscales. These players had tendencies to set extremely high personal standards for performance, engage in overly critical self-evaluations of performance, and perceive high levels of pressure to be perfect from significant others in the performance environment (i.e., parents and coaches). These players had higher T-Ang angry reaction scores than all other clusters (see Table 9). These players also tended to experience higher S-Ang scores than other clusters (see Tables 9, 10 and 11). Given these players' maladaptive

tendencies, this cluster was labelled Maladaptive perfectionism. Cluster 2 contained 67 players who had quite high personal standards perfectionism and relatively high scores on the perceived parental pressure subscale of the MPS-Sport (see Table 7). Given these players' tendencies to perceive that others in the performance environment demand perfection from them, this cluster was labelled Interpersonal perfectionism. Cluster 3 contained 41 players who had relatively high scores on the concern over mistakes and personal standards dimensions and relatively low scores on the perceived parental pressure and perceived coach pressure subscales of the MPS-Sport. Given these players' tendencies to demand perfection from themselves, but low perceived social pressure to attain high standards, this cluster was labelled Intrapersonal perfectionism. Cluster 4 contained 52 players who had moderate scores on the personal standards subscale and low scores on the concern over mistakes, perceived parental pressure, and perceived coach pressure subscales of the MPS-Sport. These players set moderate personal standards for performance, were not be overly critical and stringent in their self-evaluations of performance, and did not perceive pressure to be perfect from significant others (i.e., parents and coaches). Furthermore, these players also had a tendency to perceive and report lower T-Ang angry reaction scores than both Clusters 1 and 3 (see Table 9). Given these players' profile of moderate personal standards, low concern over mistakes, low perceived parental pressure, and low perceived coach pressure, this cluster was labelled Adaptive perfectionism (cf. Dunn et al., in press).

Situation Criticality and Anger

Given the consistent differences between Cluster 1 (i.e., maladaptive perfectionism) and Cluster 4 (i.e., adaptive perfectionism) on all T-Ang (see Table 9) and S-Ang variables (see Tables 10 and 11), data pertaining to these two clusters were used to determine if S-Ang levels differed across these two perfectionism clusters as a function of situation criticality. A 2 x 2 factorial design (perfectionism group x situation) with repeated measures on the second factor was employed. The data were analyzed with a doubly multivariate repeated measures multivariate analysis of variance (DM-MANOVA; Schutz & Gessaroli, 1987) because three dependent variables (i.e., FA, FLEAV, FLEAAS) were measured at each level of the repeated measures factor (i.e., low and high criticality situations). Significant multivariate omnibus test statistics were followed up by univariate analyses. For all repeated measures analyses, follow-up F-tests were employed with an adjusted alpha level (i.e., .05/*k*, where *k* = the number of univariate tests) to prevent an inflation of the Type I error rate (see Schutz & Gessaroli for a detailed discussion). Therefore, the level of significance (alpha) used for each of the univariate F-tests was set at .016 (i.e., .05/3). Table 12 provides the means (M) and standard deviations (SD) of the two cluster groups across all S-Ang subscales.

Table 12.

Adaptive and Maladaptive Cluster State Anger Means and Standard Deviations

	Perfectionism Group			
	Adaptive		Maladaptive	
State Anger Subscale	M	SD	M	SD
Feeling angry				
Low criticality	14.52	4.35	18.38	4.31
High criticality	17.39	4.81	20.25	4.09
Feel like expressing anger verbally				
Low criticality	8.56	3.95	10.41	3.44
High criticality	9.60	4.14	12.65	2.81
Feel like expressing anger at someone				
Low criticality	6.89	3.20	7.67	3.58
High criticality	7.60	3.72	9.48	4.00

Significant multivariate omnibus tests for interaction (Wilks' $\Lambda = .863$, F [3, 96] $= 5.059$, $p < .005$), group (Wilks' $\Lambda = .840$, F [3, 98] $= 6.077$, $p < .005$), and situation (Wilks' $\Lambda = .661$, F [3, 98] $= 16.387$, $p < .001$) were obtained. However, follow-up F-tests for group-by-time interactions for all three S-Ang subscales were not significant (all $ps > .016$).

Feeling angry. Significant main effects for group (F [1, 98] $= 17.789$, $p < .001$) and situation (F [1, 98] $= 39.394$, $p < .001$) were obtained for S-Ang FA. As seen in Figure 1, these results indicate that players in the maladaptive cluster experienced

more intense FA scores (M. = 19.31) than players in the adaptive cluster (M. = 15.95) regardless of the degree of criticality inherent in a situation (i.e., main effect for group). The situation main effect revealed that both groups combined had higher S-Ang FA scores (M. = 18.82) in the high criticality situation than in the low criticality situation (M. = 16.45).

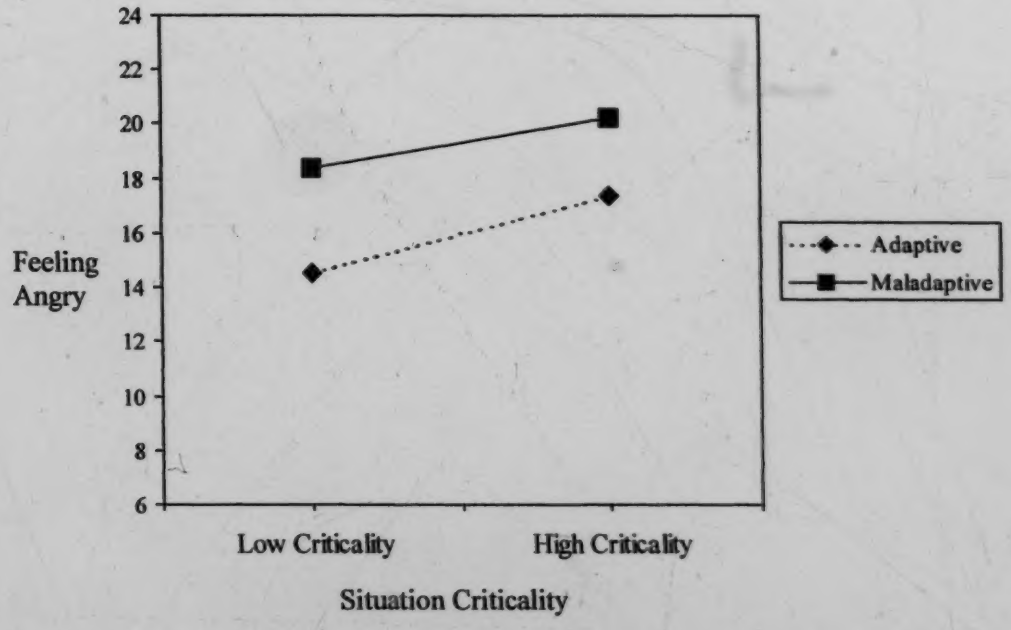

Figure 1. S-Ang feeling angry scores for perfectionism groups across situations.

Feel like expressing anger verbally. Significant main effects for group (F [1, 98] = 13.218, p < .001) and situation (F [1, 98] = 34.611, p < .001) were obtained for S-Ang FLEAV. As seen in Figure 2, these results indicate that players in the maladaptive cluster experience more intense FLEAV scores (M. = 11.53) than players in the adaptive cluster (M. = 9.08) regardless of the degree of criticality inherent in a situation (i.e., main effect for group). The situation main effect revealed that both groups combined had higher S-

Ang FLEAV scores (M. = 11.12) in the high criticality situation than in the low criticality situation (M. = 9.48).

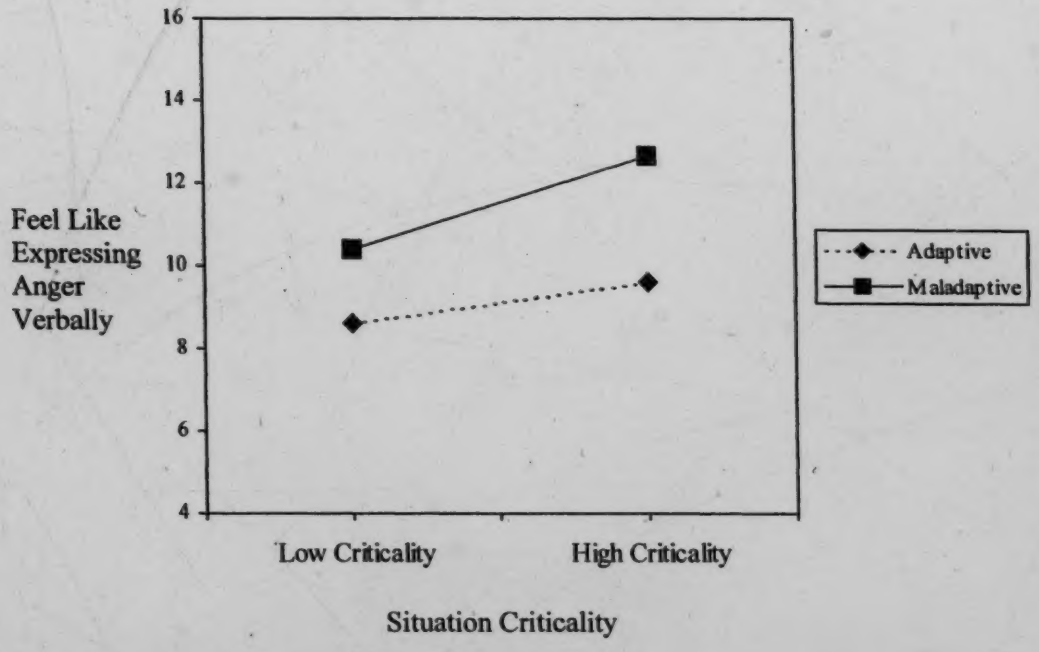

Figure 2. S-Ang feel like expressing anger verbally scores for perfectionism groups across situations.

Feeling like expressing anger at someone. A significant main effect for situation (F [1, 98] = 15.798, $p < .001$) was obtained for S-Ang FLEAAS, however, the main effect for group was not significant when alpha was adjusted to control for Type I error (F [1, 98] = 4.124, $p > .016$). As seen in Figure 3, situation main effect reveals that both groups combined had higher FLEAAS scores (M. = 8.54) in the high criticality situation than in the low criticality situation (M. = 7.28).

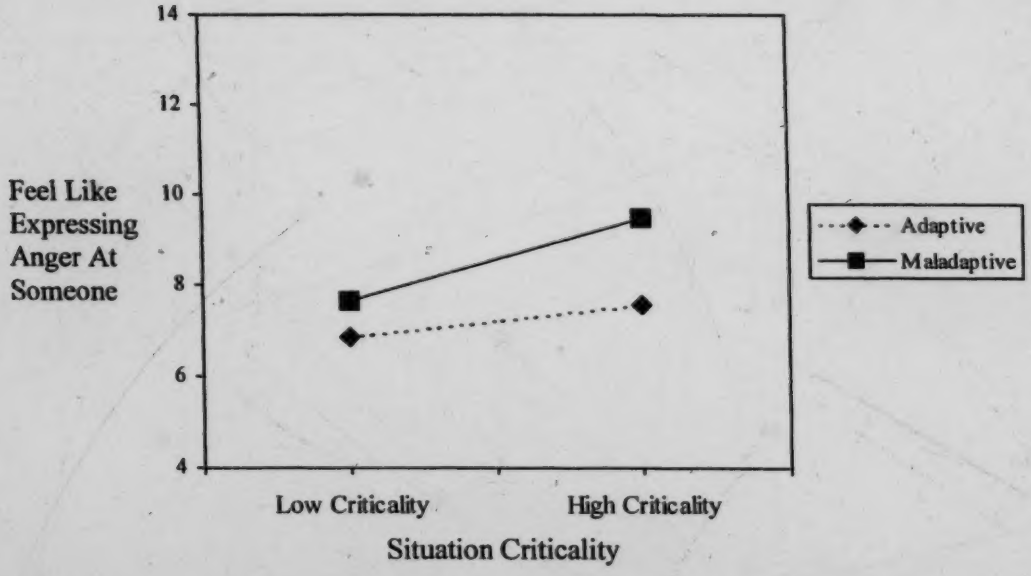

Figure 3. S-Ang feel like expressing anger at someone scores for perfectionism groups across situations.

CHAPTER 5

Discussion

Adopting an interactionist approach, the overall purpose of this investigation was to gain a deeper understanding of the relationship between perfectionism and anger in competitive youth ice hockey. Results of this investigation suggested that hockey players with maladaptive perfectionist tendencies experience and express more intense anger responses following mistakes during competition (regardless of the perceived importance of the situation) than players with adaptive perfectionist tendencies. Furthermore, players with maladaptive perfectionist tendencies are more likely to be predisposed to experiencing and expressing anger in competition than adaptive perfectionists.

This investigation used the MPS-Sport (Dunn et al., in press) to assess youth hockey players' perfectionist tendencies in hockey. Results from this investigation were consistent with Dunn et al.'s findings that a four-factor solution (i.e., concern over mistakes, personal standards, perceived parental pressure, perceived coach pressure) best represents the latent dimensionality of the MPS-Sport. Although Dunn et al.'s exploratory factor analyses (EFA) of the MPS-Sport resulted in a 30-item solution that demonstrated excellent simple structure, results from the current EFA of the MPS-Sport identified four items that lacked simple structure. Three of the four items (i.e., items 3, 25, 33) were designed to measure perceived parental pressure, and one item (i.e., Item 23) was designed to measure perceived coach pressure. All four problematic items cross-loaded on the personal standards factor. Perhaps the sample under investigation perceived certain aspects of the perceived parental pressure and personal standards factors in a similar manner. Because the nature and content of these four items pertained to high

standards and excellence from parents and coaches, it makes conceptual sense that these items loaded on the personal standards factor. It is possible that this conceptual ambiguity or overlap may be attributed to the younger age of the athletes who participated in this investigation (i.e., M age = 14.15 years) in comparison to Dunn et al.'s older sample (i.e., M age = 18.24 years). Research using the MPS-Sport with similarly aged athletes is needed to determine if the four items that cross-loaded in this study demonstrate similar cross-loading patterns in the future. If these four items continue to demonstrate poor simple structure, then permanent deletion (or replacement) of these items from the MPS-Sport may be required. However, it should be noted that these four items demonstrated excellent simple structure in Dunn et al.'s (in press) original scale-construction paper. Future research may also consider the use of confirmatory factor analysis to determine the best fitting solution for these problematic items. Nonetheless, the results of this investigation do suggest that sport-specific perfectionism measured by the MPS-Sport can be conceptualized as a multidimensional construct comprising of at least four latent dimensions.

In this investigation, the MPS-Sport was deemed a suitable measure of perfectionism in sport. However, given the relative infancy of this instrument, further sport psychology research employing the MPS-Sport is required to establish more validity and reliability evidence. In other words, future research is required to investigate the factorial, convergent, discriminant, and predictive validity of the MPS-Sport. For example, Frost et al. (1992) examined the psychometric properties of the original Frost-MPS (Frost et al., 1993) and the Hewitt-MPS (Hewitt & Flett, 1991) and found that there was a close relationship between the two measures. Although sport psychology

researchers have yet to employ the Hewitt-MPS in a sport-specific setting, comparing the MPS-Sport with a sport-modified version of the Hewitt-MPS would contribute to the advancement of the study of perfectionism in sport. It is also worth noting that the MPS-Sport does not assess Hewitt and Flett's (1991) *other-oriented perfectionism* dimension (i.e., the tendency to have unrealistic expectations for others in the social environment). This subscale seems likely to have some utility in the competitive youth sport environment because it may be possible that players experience and express anger due to the failure of team-mates to live up to their own personal performance standards and expectations of perfection. Future research is required to determine the influence of other-oriented perfectionism upon athletes' emotional responses in youth sport.

The perceived coach pressure dimension of perfectionism is a relatively new dimension of perfectionism and is believed to reflect a "situationally specific sub-component of socially prescribed perfectionism that is unique to the competitive sport environment" (Dunn et al., in press). Given the lack of construct validity evidence pertaining to this subscale, future research employing the MPS-Sport needs to determine whether the perceived coach pressure dimension is indeed a valid dimension of socially prescribed perfectionism in sport (Dunn et al.). Previous perfectionism research outside the context of sport has found a strong relationship between Hewitt and Flett's (1991) socially prescribed perfectionism dimension and Frost et al.'s (1990) parental perfectionism subscales (i.e., PE and PC). The direction and magnitude of the correlation between perceived coach pressure and perceived parental pressure in this study ($\underline{r} = .25$) provides some support that perceived coach pressure may be a sport-specific subcomponent of socially prescribed perfectionism.

In their seminal MPS scale-construction work, Frost et al. (1990) originally suggested the retention of separate subscales to measure parental expectations and parental criticism. However, recent research examining the dimensionality of the Frost-MPS suggests that these two subscales may be best represented by a single factor (e.g., Dunn et al., in press; Purdon et al., 1999; Stöber, 1998). This study provided further evidence to suggest that parental expectations and parental criticism may be best represented by a single factor (labelled, perceived parental pressure). In other words, similar to the findings of Dunn et al., only one factor emerged in this study that contained all items designed to measure parental criticism and parental expectations.

The bivariate correlations between the MPS-Sport subscales (i.e., inter-subscale correlations) (see Table 6) warrant further discussion. Examination of these correlations indicates moderate relationships between concern over mistakes and (a) perceived parental pressure (r = .45), and (b) perceived coach pressure (r = .41). The direction and magnitude of these correlations are almost identical to those obtained by Dunn et al. (in press) who found that concern over mistakes was positively correlated with both (a) perceived parental pressure (r = .44) and (b) perceived coach pressure (r = .43) in a sample of male Canadian football players. Given the evaluative and social nature of these subscales, it may be suggested that these dimensions reflect aspects of the hierarchical perfectionism factor labelled by Frost et al. (1993) as *maladaptive evaluation concerns*.

To the best of the investigator's knowledge, this is the first investigation to employ a version of the STAXI-2 in a competitive sport environment. Factor analysis of the sport modified S-Ang scales (i.e., for high and low criticality) produced pattern matrices that were relatively consistent with Spielberger's (1999) three-dimensional S-

Ang construct. However, an important conceptual difference between the present factor analytic findings (see Tables 2 and 3) and Spielberger's conceptualization of S-Ang did occur. Specifically, the current study obtained a factor that was deemed to reflect a player's tendency to feel like expressing anger at someone (i.e., FLEAAS), which differs from Spielberger's original factor that reflected an individual's tendency to feel like expressing anger physically (i.e., FLEAP) but not necessarily at someone. This new factor (i.e., FLEAAS) may be a direct reflection of the ice hockey context under examination. Stated differently, feel like expressing anger at someone may be a dimension of S-Ang that is distinct and unique to the sport environment. For example, this factor may have emerged due to the high contact nature of ice hockey (i.e., body contact) where expressing anger towards opposing players is a relatively common occurrence and can even be done legitimately within the rules of the game. The emergence of this factor may also have been attributable to the item-modifications that were made to make the S-Ang scale salient to the sport of ice hockey. Clearly, more research using the STAXI-2 S-Ang subscale in the competitive sport environment is necessary to determine whether the feel like expressing anger at someone factor is a stable and valid dimension of S-Ang in competitive sport.

In contrast to the S-Ang scales, there were no conceptual (i.e., factorial) differences between the T-Ang scale used in this study and Spielberger's (1999) two-factor model, despite modifications to four items in the sport-modified T-Ang scale used in this study. In other words, T-Ang appears to be a robust construct consisting of both angry reaction and angry temperament dimensions irrespective of whether T-Ang is construed as a general construct, or as a domain specific construct (i.e., Sport T-Ang).

The extent to which global T-Ang and sport-specific T-Ang are related requires further investigation.

Results of bivariate correlational analyses (see Table 6) indicate some consistent relationships between certain perfectionism dimensions and anger. Specifically, the concern over mistakes subscale had significant positive correlations with the two T-Ang subscales, and all three S-Ang subscales in both the high and low criticality situations. In other words, players reporting high concern over mistakes were more likely to be predisposed to experiencing and expressing anger in competition than players low in concern over mistakes. These results are conceptually consistent with previous research in sport psychology showing that the concern over mistakes dimension of perfectionism is primarily associated with maladaptive cognitions, affect, and behaviors in sport (e.g., Coen & Ogles, 1993; Dunn et al., in press; Frost & Henderson, 1991; Gould et al., 1996; Hall et al., 1998). Similarly, the perceived coach pressure subscale of the MPS-Sport had significant positive correlations with all T-Ang and S-Ang subscales with the exception of the feeling angry S-Ang subscale in the high criticality situation (see Table 6). Stated differently, players reporting high levels of perceived coach pressure were more likely to be predisposed to experiencing and expressing anger in competition than players low in perceived coach pressure. As stated previously, perceived coach pressure is believed to be a sport-specific subcomponent of Hewitt and Flett's (1991) socially prescribed perfectionism. Individuals with high socially prescribed perfectionism believe that significant others set exceedingly high standards for them, and that these significant others evaluate them stringently. It is therefore not surprising that individuals high in perceived coach pressure experienced higher levels of anger than low perceived coach

pressure players because these players feel that they have not achieved the goal of meeting significant others' expectations. In accordance with theory, if a goal is blocked or unattained, then anger is likely to follow (Berkowitz, 1989; Dollard et al., 1939; Lazarus, 1991).

The correlational findings pertaining to perceived parental pressure and perceived coach pressure partially support Hewitt and Flett's (1991) contention that individuals may experience negative emotions when significant others in the social environment have extremely high expectations for them (i.e., socially prescribed perfectionism). Bivariate correlations indicated that both the perceived parental pressure and perceived coach pressure dimensions of perfectionism were frequently associated with maladaptive responses (i.e., anger responses and predispositions). It is possible that perceived coach pressure had higher correlations with state and trait anger than perceived parental pressure because the coach is the primary source of immediate criticism, evaluation, and feedback during competition. In other words, because the coach has the greatest influence over the players in the hockey environment (i.e., especially as it relates to playing time and the provision of immediate performance feedback), players' levels of perceived coach pressure may have a greater functional influence on anger experienced during competition than perceived parental pressure. More research in youth sport settings is required to examine the influence of perceived coach pressure and perceived parental pressure on emotional reactions among adolescent athletes. However, it should be noted that previous youth-sport research has shown that significant others in the performance environment (perceived or actual) can negatively impact emotional and affective

responses among athletes including increased competitive anxiety and stress, and decreased self-esteem (e.g., Brustad, 1988; Passer, 1983; Weiss, Weise, & Klint, 1989).

This is the first investigation to examine the relationship between perfectionism and T-Ang in sport. The concern over mistakes, perceived coach pressure, and perceived parental pressure subscales of the MPS-Sport all positively correlated with angry temperament and angry reaction. The direction of these correlations indicates that players become more likely to experience anger without any stimulus or provocation (i.e., angry temperament) and are more likely to experience anger in sport due to feelings of frustration (i.e., angry reaction) as their levels of concern over mistakes, perceived parental pressure, and perceived coach pressure increase. The maladaptive nature of concern over mistakes, perceived parental pressure, and perceived coach pressure appears to be reinforced by these results.

These results are consistent with research that has examined the relationship between perfectionism and anger in non-sport settings. Antony and Swinson (1998) proposed that setting extremely high expectations and standards for personal performance may result in experiences of anger when the individual fails to achieve these expectations and standards. Research supporting this contention has indicated that the tendency to set extremely high standards and to perceive that significant others have extremely high expectations for them (and evaluate them stringently) is associated with impatience, achievement striving, and anger (e.g., Flett et al., 1994; Hewitt & Flett, 1991; Hill et al., 1997). Although the multidimensional facets of anger were not examined in these studies, they nonetheless suggest that maladaptive dimensions of perfectionism and anger are related.

Personal standards perfectionism had a small positive correlation with T-Ang angry reaction, but was not correlated with T-Ang angry temperament (see Table 6). It is possible that personal standards perfectionism has no relationship (on its own) with anger because it is not the setting of high or low personal standards per se that influences anger responses, but rather it is the perceived attainment of these standards that influences anger. Examination of the personal standards items (Table 1) shows that five of the seven items in this factor relate to the setting of high standards (items 14, 16, 19, 28, and 30), whereas only two items make reference to the achievement of these standards (items 1 and 6). Thus it may be argued that the personal standards dimension primarily taps an individual's attitude towards the importance of setting high personal standards. In contrast, items in the three other MPS-Sport subscales (i.e., COM, PCP, PPP) tend to measure an individual's perceptions or beliefs about achieving standards, or more specifically, about not achieving standards (i.e., in the form of making mistakes or meeting other peoples' standards). Thus, simply setting high or low personal standards may have no direct bearing upon whether anger is experienced. Rather, it may be the perceived attainment of standards that dictates whether or not anger is experienced.

The results discussed to this point have examined the perfectionism subscales in isolation to each other. However, due to the multidimensional nature of perfectionism, players' patterns of scores across the four perfectionism dimensions should be considered simultaneously when attempting to identify adaptive and maladaptive profiles of perfectionism (Dunn et al., in press) because different perfectionism profiles (based on scores on specific perfectionism subscales) may be associated with "different problems and concerns" (Frost et al., 1990, p. 467). Indeed, Frost et al. expressed a need for

research in perfectionism to investigate and assess the implications and importance of profiling perfectionist characteristics (i.e., as measured by the MPS subscales). Unfortunately, with the exception of studies by Dunn et al. (in press) and Hall et al. (1998), most research examining perfectionism in sport has treated the dimensions of perfectionism independently (i.e., Coen & Ogles, 1993; Frost & Henderson, 1991; Gould et al., 1996). To overcome this problem, this study attempted to create perfectionism profiles using cluster analysis which took players' scores on all four MPS-Sport dimensions into consideration at one time.[2] Parker (1997) used cluster analysis to identify perfectionism profiles in a sample of academically talented school children. Parker's analysis revealed three perfectionism clusters that represented (a) children whose perfectionism scores were low across all MPS subscales (i.e., nonperfectionist students), (b) children who had moderate levels of personal standards perfectionism and low scores on the remaining MPS subscales (i.e. healthy perfectionists), and (c) children who had very high scores on all subscales of the MPS (i.e., dysfunctional perfectionists).

Two of the clusters that emerged in the current study (i.e., Clusters 1 and 4: see Table 7) were quite similar to the "dysfunctional" and "healthy perfectionism" clusters identified by Parker (1997). In the current investigation, players in Cluster 1 had perfectionism profiles that consisted of very high mean scores across all MPS-Sport subscales. These players had tendencies to set extremely high personal standards for performance, engage in overly critical self-evaluations of performance, and perceive high

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[2] It must be recognized that the perfectionism profile classifications in this study are only relevant to the players in this particular sample. Therefore, a player in a specific cluster in this investigation, may be classified in a different cluster in a different sample.

levels of pressure to be perfect from significant others in the performance environment (i.e., parents and coaches). This profile has many similarities to the "unhealthy perfectionism" cluster reported by Parker, and to the profile of maladaptive perfectionism identified by Dunn et al. (in press) who used canonical correlation to identify perfectionism profiles in male Canadian football players.

In contrast to Cluster 1, Cluster 4 contained players who had moderately high mean scores on the personal standards subscale and low mean scores on the concern over mistakes, perceived parental pressure, and perceived coach pressure subscales of the MPS-Sport. These players set moderately high personal standards for performance, were not overly critical and stringent in their self-evaluations of performance, and did not perceive pressure to be perfect from significant others (i.e., parents and coaches). Given these players' profile of moderately high personal standards, low concern over mistakes, low perceived parental pressure, and low perceived coach pressure, this cluster was similar to Parker's "healthy perfectionism" cluster of academically talented school children and Dunn et al.'s "adaptive perfectionism" canonical variate in their sample of high performance football players.

One important difference between the cluster analysis results reported by Parker (1997) with the original Frost-MPS and the cluster analysis results obtained in this investigation (with the MPS-Sport) is worthy of discussion. Parker's cluster containing children with low scores across all subscales of the MPS (i.e., nonperfectionist students) was not replicated in the current sample of hockey players. Moreover, it should be noted that the mean personal standards subscale score in Cluster 4 ($\underline{M}$ = 23.4; $\underline{SD}$ = 5.0) is very similar to the mean personal standards subscale score in Parker's "healthy perfectionism"

group of academically gifted children ($\underline{M}$ = 24.0; $\underline{SD}$ = 4.0). Given the calibre of competitive hockey that was examined in this study (i.e., Pee Wee Tier I, Bantam AA, and Bantam AAA), it is likely that most players in these leagues would be achievement oriented and therefore have moderate to high levels of personal standards perfectionism. Finding athletes with low personal standards perfectionism who play this level of hockey would be quite unexpected.

The maladaptive and adaptive nature of Clusters 1 and 4 respectively was further reinforced by the differences in T-Ang and S-Ang levels between these clusters (see Tables 8 to 11). Players in the maladaptive cluster (C1) were significantly more predisposed to experiencing anger without specific provocation (i.e., angry temperament) as well as in response to frustration and/or negative evaluation (i.e., angry reaction) than players in the adaptive cluster (C4: see Table 9). In the low criticality situation, players in the maladaptive cluster were significantly more likely to feel angry and express anger verbally when a mistake was made during competition than players in the adaptive perfectionism cluster (C4: see Table 10). In the high criticality situation, players in the maladaptive cluster (C1) were significantly more likely to feel angry, express anger verbally, and express anger at someone following a mistake than players in the adaptive cluster (C1: see Table 11).

Given that players in Cluster 1 set extremely high personal standards for performance, were overly concerned with their mistakes, and believed that significant others (both coaches and parents) had extremely high expectations and evaluated their performance efforts stringently, it seems reasonable to suggest that these players rarely felt that they had achieved their performance goals (i.e., avoid personal failure and meet

the expectations of others). This constant feeling of perceived failure (i.e., goal blockage) would make these players prone to experiencing a sense of frustration that would likely lead to anger (Berkowitz, 1989; Dollard et al., 1939; Lazarus, 1991). Given their extremely high personal standards and rigid self-evaluative tendencies, it is unlikely that these maladaptive perfectionists perceive much personal success or experience a sense of personal satisfaction following performance in ice hockey. It seems likely that maladaptive perfectionists may be more prone to experiencing anger because they feel that (a) their efforts are never good enough, (b) they never do things quite good enough, (c) they demand higher performance than is possible, (d) they always feel they should do better, and (e) they generally feel that they cannot live up to the expectations of others. Thus their personal goals are rarely if ever achieved, causing them to be more prone to experiencing anger in the sport environment. This anger response is in line with Dollard et al.'s (1939) theory on frustration and aggression which contends that goal blockage leads to the experience and expression of anger. In other words, because maladaptive perfectionists tend to feel that they have underachieved (which equates to failure in their eyes), they have a tendency to experience anger in sport.

In contrast, players in the adaptive cluster (C4) set moderate personal standards and goals for performance, were not overly concerned with their mistakes, and did not perceive that significant others held extremely high expectations for their performance accomplishments. These adaptive tendencies probably allow players to view mistakes in the performance environment as learning opportunities that are inevitable, and enable players to adopt the perspective that an adequate or successful performance is not conditional upon a mistake-free performance. By permitting themselves the luxury of

making mistakes, anger is less likely to be experienced because their performance goal (or standard) can still be achieved even if mistakes occur. In accordance with perfectionism theory, it is the players in the adaptive cluster who are likely to "derive a very real sense of pleasure from the labours of painstaking effort" (Hamachek, 1978, p. 27) because they feel free to be less precise as the situation permits.

The final question of this investigation examined the extent to which the degree of situation criticality in a hockey game influenced the intensity of S-Ang that is experienced and expressed following a mistake. As such, this investigation considered both the characteristics of the individual and the characteristics of a situation in determining the intensity at which experiences and expressions of anger occur. Endler and Magnusson (1976) proposed that behavior is a function of continuous interactions between the individual and the situation. That is, both the person and the situation are important factors that influence behavior. By adopting a mechanistic model of interactionism (i.e., interaction between two independent variables), this investigation simultaneously described, classified, and analyzed both situation- (i.e., situation criticality) and personality-variables (i.e., perfectionism) and the interaction between these variables (Endler & Parker, 1992).

It was hypothesized that players, irrespective of their perfectionism levels, would experience higher levels of S-Ang following a mistake in a high criticality situation than in a low criticality situation. Results from the DM-MANOVA found no statistically significant group (i.e., adaptive and maladaptive perfectionists) x situation (i.e., low and high situation criticality) interactions for S-Ang, however, significant situation main effects for all three S-Ang subscales were obtained (see Figures 1 to 3).

The situation main effects (i.e., low and high criticality) for all three S-Ang subscales (i.e., FA, FLEAAS, FLEAV) indicated that the mean S-Ang subscale scores for all players (i.e., adaptive and maladaptive perfectionists combined) were significantly higher in the high criticality situations than in the low criticality situations. These results indicate that regardless of players' perfectionism levels (i.e., adaptive or maladaptive), players indicated that they were more likely to experience and express higher intensity anger responses in a situation perceived as being more important (i.e., breakaway with 5 minutes remaining in a tied game) than in a similar situation of less perceived importance in the hockey game (i.e., breakaway with 5 minutes remaining in the first period of a tied game). These results, when taken in conjunction with the content relevance ratings that were provided by the judges, reinforce the notion that players (a) recognize or perceive differences in situation criticality, and (b) respond with different levels of emotions in these situations.

Significant group main effects (i.e., adaptive and maladaptive perfectionism) were obtained for two of the three S-Ang subscales (i.e., feeling angry, and feel like expressing anger verbally). Analysis of these results (Figures 1 and 2) indicates that the mean S-Ang subscale scores for players in the maladaptive perfectionism group were significantly higher than the mean S-Ang subscale scores for players in the adaptive group irrespective of the degree of criticality inherent in a situation. It appears that maladaptive perfectionists are more likely to report that they will experience more intense levels of S-Ang following mistakes in competition than adaptive perfectionists, regardless of the degree of criticality inherent in a situation.

Given the potentially debilitative effects that elevated anger can have upon decision-making (Isen, 1993), motor-performance (Solkoff et al., 1964), oxygen consumption (Crews, 1992), and emotional exhaustion (Kellmann, 2001), it seems likely that players with adaptive perfectionist tendencies will be less likely to experience decrements in performance following mistakes in competition than maladaptive perfectionists. Future research is required to establish the validity of this hypothesis.

Accurately assessing and measuring emotions at the specific moment that they occur in the performance environment is extremely difficult (if not impossible). Because of this difficulty, it is important to recognize that players in this study were asked to read hockey specific scenarios and to speculate upon the likely level of their anger responses if the situations were to occur in a game setting. In other words, true levels of self-report S-Ang were not obtained. It is therefore not possible to determine how accurate these "speculative" levels of S-Ang would reflect true levels of S-Ang had the players actually experienced those situations and the S-Ang levels measured at that time. However, it should be noted that all possible measures were taken to ensure the most accurate responses possible were provided by the players (e.g., presentation order alteration, explicit verbal instructions and directions). Test-retest data on these S-Ang scores may have helped to determine the reliability of players' speculated S-Ang responses.

Relatively few researchers in sport psychology have examined the situational context within which athletes' emotions occur. Dunn and Nielsen (1996) examined anxiety-inducing sport situations that were identified by male and female high performance athletes. Inductive content analysis suggested that athletes may experience negative emotions such as anxiety in game situations where the score was close with

minimal time remaining, and when the game was perceived as important. Krane et al. (1994) found that female softball players reported higher cognitive and somatic state anxiety immediately prior to batting under conditions of high criticality situations (i.e., minimal score differential, runner on third base) as opposed to low criticality situations (i.e., high score differential, beginning of game). Furthermore, Marchant et al.'s (1998) study examining state anxiety levels and the perceived importance of a golf chipping task indicated that the value an individual places on achieving a goal was related to experiences of state anxiety. Stated differently, the higher the value an individual places on achieving a goal, the more intense state anxiety was experienced.

In accordance with Lazarus's (1991) view that negative emotions such as anger result from goal incongruence, the players in this sample may have experienced more intense anger responses in the high criticality situation because the perceived importance of the personal goal (i.e., to score on the breakaway or win the game) was increased. In other words, more frustration and anger may be experienced when the perceived consequences of goal blockage are magnified. In the highly criticality situation, it seems likely that players may have felt that there would not be any more quality opportunities to win the game. In contrast, the players may have felt that there would be more quality opportunities to score during the remainder of the game when the shooting error was committed earlier in the game. Irrespective of the reason why higher intensity anger levels were experienced in the high criticality situation in comparison to low criticality situation in this study, the results reinforce the need to consider the specific characteristics of the situation when examining emotional responses in the competitive sport environment.

CHAPTER 6

Conclusions and Recommendations

Results from this investigation suggest that competitive youth ice hockey players with maladaptive perfectionist tendencies are more likely to experience and express higher levels of S-Ang when a mistake is made in competition than players with adaptive perfectionist tendencies. Furthermore, players with maladaptive perfectionist tendencies appear to have a stronger predisposition to experience and express anger (i.e., T-Ang) than players with adaptive perfectionist tendencies. Results also indicate that players recognize and perceive differences in situation criticality, and respond with different levels of emotions (i.e., anger) following mistakes. Finally, results show that maladaptive perfectionists are likely to report experiencing more intense levels of S-Ang following mistakes in competition than adaptive perfectionists, regardless of the degree of criticality inherent in a situation.

The results of this study support the examination and conceptualization of perfectionism as a multidimensional construct in the competitive sport domain. Furthermore, results support Hamachek's (1978) theory that perfectionism has both adaptive and maladaptive functions, and extend Hamachek's theory in the context of sport. In assessing perfectionism in competitive youth sport, the MPS-Sport proved to be a useful tool for measuring perfectionism. Consistent with theory and previous research in sport psychology (i.e., Dunn et al., in press), a four-dimensional model of perfectionism appeared to provide an adequate representation of perfectionism in sport. Cluster analysis results suggested that extremely high scores across all subscales of the MPS-Sport corresponded with maladaptive perfectionism given that this profile was

strongly related to predispositions to experience and express anger in ice hockey. Further, a moderately high personal standards subscale score combined with low scores on the remaining MPS-Sport subscales was the most adaptive profile of perfectionism, with players in this group reporting little predisposition and/or likelihood to experience and express anger in ice hockey.

The current results have a number of implications for applied sport psychology practitioners. First, it is proposed that sport psychologists, coaches, and parents should educate youth sport participants on how to set reasonable (i.e., high yet attainable) personal performance standards and expectations. More importantly, these educators should encourage athletes to (a) be self-forgiving in their performance and self-evaluations, (b) avoid overly-critical and stringent self-evaluations following performance, (c) accept performance mistakes as they occur, and (d) use and view performance mistakes as learning opportunities that can be used to facilitate positive performance change. Given the potentially debilitative effects that high levels of anger can have upon performance, it is important that coaches, parents, and sport psychologists understand the reasons why players experience anger in competition. If athletes have a tendency to experience and express anger, it may be advisable to instruct those athletes on how to cognitively restructure and/or change their perceptions of the situation when a performance crisis (e.g., mistake) occurs.

Coaches must also become aware of the dangers of burdening players with excessive expectations, pressure to perform, and criticism. Given the current findings, it is recommended that coaches encourage or set high, yet realistic performance expectations for their players, and provide constructive instructional feedback when

players make performance mistakes during competition so that players can ultimately experience the success, satisfaction, and enjoyment that should be synonymous with youth sport.

The overall results of this investigation support Hamachek's (1978) theoretical framework of adaptive and maladaptive perfectionism and provide a basis for further study of perfectionism in sport. Based upon the present results, the following list of potential directions for future research is presented:

1. If researchers wish to obtain a greater understanding of the perfectionist personality style in sport, future research should continue to use measures that are most relevant to the sporting context under examination (i.e., the MPS-Sport). The MPS-Sport functioned in accordance with theoretical expectations in this study, however, future research should continue to test the dimensionality of the instrument and examine whether the four dimensional-factor structure is robust across different sports (e.g., contact versus non-contact, team versus individual), different performance levels (e.g., recreational, competitive, professional), and different population demographics (e.g., age, gender) within those contexts. It would also seem prudent for future researchers to continue to examine the dimensionality of perfectionism in sport because other salient dimensions of perfectionism in the competitive sport environment may exist (e.g., perceived team-mate pressure). Moreover, the MPS-Sport does not consider Hewitt and Flett's (1991) *other-oriented* perfectionism dimension (i.e., the tendency to have unrealistic expectations for others). This subscale seems likely to have some utility in competitive team sport settings. It may be that players experience and express anger due to the failure of team-mates to live up to the players' personal performance standards and

expectations. Research in sport psychology has yet to examine this dimension of perfectionism among athletes.

2. This investigation employed hierarchical cluster analysis to establish profiles of perfectionism based on players' mean subscale scores on the MPS-Sport. Future research should continue to employ cluster analysis to determine if the perfectionism profiles obtained in this study are consistent and replicable across other samples and sport contexts. Irrespective of whether cluster analysis, or other statistical procedures (e.g., canonical correlation analysis) are used, it is clear that the best understanding of perfectionism will be obtained if scores on all dimensions are considered simultaneously when identifying profiles associated with adaptive and maladaptive perfectionism (Dunn et al., in press).

3. To date, research on perfectionism in sport has examined youth athletes (Gould et al., 1996; Hall et al., 1998), and amateur adult athletes (Coen & Ogles, 1993; Dunn et al., in press; Frost & Henderson, 1991). All of these studies have proposed that the personal standards dimension of perfectionism is the most adaptive in terms of its functionality. Furthermore, several prominent sport psychologists have postulated that it is the adaptive perfectionist orientation that is believed to be characteristic of high-level athletes (e.g., Anshel, 1993; Hardy et al., 1996; Henschen, 2000). Given the characteristics of the adaptive perfectionist orientation, it seems reasonable to suggest that athletes at the top levels of their respective sports (e.g., national, international, professional) would exhibit a perfectionist orientation that is predominantly adaptive in nature. An investigation examining elite level athletes and their perfectionist orientations would facilitate a deeper conceptual understanding of adaptive perfectionism in sport.

4. Although research on perfectionism in sport is gaining momentum, it would seem prudent to explore the impact of developing and using practical techniques that can, (a) teach athletes to set high personal standards and goals for performance, (b) teach athletes to avoid the destructive tendency of being overly critical and stringent in their self-evaluations, (c) teach athletes how to use performance mistakes constructively and in ways that can facilitate performance and skill development, and (d) teach coaches and parents to foster adaptive perfectionist tendencies in their athletes and refrain from adding performance pressure and criticism in an already pressure-filled competitive environment.

5. A number of studies have found that the emotion of anger in sport may have facilitative or debilitative properties depending on the perceptions of the athlete (e.g., Hanin & Syrjä, 1995). While this study investigated the nature of competitive anger from a debilitative framework, future research should examine the functional nature of anger upon performance (cf. Lazarus, 2000) in competitive sport.

In closing, it is important to emphasize that this investigation considered the reciprocal interaction of persons and situations with respect to behavior (Endler, 1983). Given the diverse and unique nature of the competitive sport environment, researchers should consider adopting an interactionist approach when conducting future sport psychology research that examines the link between perfectionism and emotional responses in competitive sport. It is hoped that this study will provide a starting point from which future research examining person x situation interactions in sport can be based.

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APPENDICES

Appendix A

Demographic Questionnaire

2001/2002 High Performance Hockey Survey

Please provide the following information about yourself:

1. Age: ____ years, ____months (e.g., 13 years, 4 months).
2. What hockey team do you currently play with? (*Please indicate level*).

   _____

3. How many years have you played competitive ice hockey in organized leagues?

   ____ years.

4. What position do you most regularly play? (*Circle appropriate response*).

   Goaltender.....Defense.....Wing.....Center

➢ ***The individual information you provide here will be kept private. Your coaches, parents, and team mates will NOT see your individual responses to these questionnaires.***

Appendix B

Sport-Multidimensional Perfectionism Scale

Performance Expectations In Sport Scale

INSTRUCTIONS: The purpose of this questionnaire is to identify how players view certain aspects of their competitive experiences in sport. Please help us to more fully understand how players view a variety of their competitive experiences by indicating the extent to which you **agree or disagree** with the following statements. Please do this by circling one response-option to the right of each statement. Some of the questions relate to your sport experiences in general, while others relate specifically to your experiences on the hockey team that you most recently played with. **There are no right or wrong answers** so please don't spend too much time on any one statement; simply choose the answer that best describes how you view each statement.

To what extent do you agree or disagree with the following statements?	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree
1. If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player.	SD	D	NA	A	SA
2. Even if I fail slightly in competition, for me, it is as bad as being a complete failure.	SD	D	NA	A	SA
3. My parents set very high standards for me in sport.	SD	D	NA	A	SA
4. I feel like my coach criticizes me for doing things less than perfectly in competition.	SD	D	NA	A	SA
5. In competition, I never feel like I can quite meet my parents' expectations.	SD	D	NA	A	SA
6. I hate being less than the best at things in my sport.	SD	D	NA	A	SA
7. If I fail in competition, I feel like a failure as a person.	SD	D	NA	A	SA
8. Only outstanding performance during competition is good enough in my family.	SD	D	NA	A	SA
10. Only outstanding performance during competition is good enough for my coach.	SD	D	NA	A	SA
11. My parents have always had higher expectations for my future in sport than I have.	SD	D	NA	A	SA
12. The fewer mistakes I make in competition, the more people will like me.	SD	D	NA	A	SA
14. It is important to me that I be thoroughly competent in everything I do in my sport.	SD	D	NA	A	SA

	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree
15. I feel like I am criticized by my parents for doing things less than perfectly in competition.	SD	D	NA	A	SA
16. I think I expect higher performance and greater results in my daily sport-training than most players.	SD	D	NA	A	SA
17. I feel like I can never quite live up to my coach's standards.	SD	D	NA	A	SA
19. I feel that other players generally accept lower standards for themselves in sport than I do.	SD	D	NA	A	SA
21. I should be upset if I make a mistake in competition.	SD	D	NA	A	SA
22. In competition, I never feel like I can quite live up to my parents' standards.	SD	D	NA	A	SA
23. My coach sets very high standards for me in competition.	SD	D	NA	A	SA
24. If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree.	SD	D	NA	A	SA
25. My parents expect excellence from me in my sport.	SD	D	NA	A	SA
26. My coach expects excellence from me at all times: both in training and competition.	SD	D	NA	A	SA
27. If I do not do well all the time in competition, I feel that people will not respect me as an athlete.	SD	D	NA	A	SA
28. I have extremely high goals for myself in my sport.	SD	D	NA	A	SA
29. I feel like my coach never tries to fully understand the mistakes I sometimes make.	SD	D	NA	A	SA
30. I set higher achievement goals than most athletes who play my sport.	SD	D	NA	A	SA
31. I feel like my parents never try to fully understand the mistakes I sometimes make in competition.	SD	D	NA	A	SA
32. People will probably think less of me if I make mistakes in competition.	SD	D	NA	A	SA
33. My parents want me to be better than all other players who play my sport.	SD	D	NA	A	SA

	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree
34. If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance.	SD	D	NA	A	SA

Note. Item numbers correspond directly with the item numbers in Dunn et al.'s (in press) original scale construction paper.

Appendix C

Item Content Assessment Form

EXPERT ITEM CONTENT ASSESSMENT FORM

Name of Reviewer:_____
Date:_____

The following is an item content-relevance assessment form. The purpose of this assessment is to obtain expert judge opinions regarding the degree to which two ice hockey situations differ with respect to situation criticality. The two situations will be included in an instrument that is being given to competitive (i.e., A, AA, and AAA levels) male Pee Wee and Bantam aged ice hockey players. We want to ensure that expert judges can identify the differences in situational criticality before we give the questionnaires to the athletes. Your help in this endeavor is much appreciated.

Please read the following definition of "situation criticality" below, then read the two situations that are listed on the following page, and make your ratings.

Definition of "Situation Criticality"

Situation criticality refers to the degree to which a game situation is perceived as being important. Previous research directly examining situation criticality in sport has labeled various situations as "highly critical". For example, instances in a baseball game where the score is tied in the fifth inning or later, or a team is behind by one run in the fifth inning or later have been labeled as highly critical situations. These situations would not be viewed as "highly critical" if they had occurred at earlier stages in the game. From the athletes' perspective, situation criticality reflects the degree to which athletes view successful behaviors (or outcomes) as differing with respect to the importance of a successful outcome.

PLEASE READ THE TWO SITUATIONS LISTED ON THE NEXT PAGE ⇒

On the following scale of 1-10, please rate the degree of criticality that you would associate with each situation:

Situation #1: With 5 minutes remaining in the **first period** of a tied game, you get a clear breakaway on the goalie. You successfully fake the goalie, but you miss the net on the shot.

Low Criticality									High Criticality
1	2	3	4	5	6	7	8	9	10

Situation #2: With 5 minutes remaining in the **third period** of a tied game, you get a clear breakaway on the goalie. You successfully fake the goalie, but you miss the net on the shot.

Low Criticality									High Criticality
1	2	3	4	5	6	7	8	9	10

Please feel free to provide any comments regarding the wording or content of the situations.

_____

_____

_____

_____

****THANK YOU FOR YOUR HELP AND COOPERATION****

Appendix D

Original Pattern Coefficients from Principal Axes Analysis of the MPS-Sport

Item	Full Item Descriptions	F1	F2	F3	F4
32.	People will probably think less of me if I make mistakes in competition.	.65	-	-	-
7.	If I fail in competition, I feel like a failure as a person.	.56	-	-	-
34.	If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance.	.52	-	-	-
2.	Even if I fail slightly in competition, for me, it is as bad as being a complete failure.	.50	-	-	-
24.	If a team-mate or opponent (who plays a similar position to me) plays better than me…	.50	-	-	-
27.	If I do not do well all the time in competition, I feel that people will not respect me as an athlete.	.46	-	-	-
21.	I should be upset if I make a mistake in competition.	.46	-	-	-
12.	The fewer mistakes I make in competition, the more people will like me.	.33	-	-	-
16.	I set higher achievement goals than most athletes who play my sport.	-	.70	-	-
30.	I think I expect higher performance and greater results in my daily sport-training than most players.	-	.69	-	-
28.	I have extremely high goals for myself in my sport.	-	.67	-	-
6.	I hate being less than the best at things in my sport.	-	.51	-	-
19.	I feel that other players generally accept lower standards for themselves in sport than I do.	-	.47	-	-
1.	If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate	-	.40	-	-
14.	It is important to me that I be thoroughly competent in everything I do in my sport.	-	.36	-	-

Appendix D Continued

Item	Full Item Descriptions	F1	F2	F3	F4
22.	In competition, I never feel like I can quite live up to my parents' standards.	-	-	.78	-
5.	In competition, I never feel like I can quite meet my parents' expectations.	-	-	.68	-
15.	I feel like I am criticized by my parents for doing things less than perfectly in competition.	-	-	.60	-
25.	My parents expect excellence from me in my sport.	-	.48	.56	-
3	My parents set very high standards for me in sport.	-	.51	.52	-
11.	My parents have always had higher expectations for my future in sport than I have.	-	-	.47	-
31.	I feel like my parents never try to fully understand the mistakes I sometimes make in competition.	-	-	.40	-
33	My parents want me to be better than all other players who play my sport.	-	.35	.41	-
8.	Only outstanding performance during competition is good enough in my family.	-	-	.38	-
17.	I feel like I can never quite live up to my coach's standards.	-	-	-	.89
4.	I feel like my coach criticizes me for doing things less than perfectly in competition.	-	-	-	.59
23.	My coach sets very high standards for me in competition	-	.36	-	.54
29.	I feel like my coach never tries to fully understand the mistakes I sometimes make.	-	-	-	.46
10.	Only outstanding performance during competition is good enough for my coach.	-	-	-	.36
26.	My coach expects excellence from me at all times: both in training and in competition.	-	-	-	.36

Note. Direct oblimin transformation: Delta = 0. Factor 1 = Concern Over Mistakes; Factor 2 = Personal Standards; Factor 3 Perceived Parental Pressure; Factor 4 = Perceived Coach Pressure. Factor pattern loadings < |.30| are not shown.

Appendix E

Original Pattern Coefficients from Principal Axes Analysis of the Low Crit S-Ang Scale

Item	Item Descriptions	F1	F2	F3
10.	Feel annoyed.	**.89**	-	-
2.	Feel irritated.	**.82**	-	-
6.	Feel mad.	**.74**	-	-
3.	Feel angry.	**.74**	-	-
1.	Become furious with myself.	**.70**	-	-
5.	Feel like breaking my stick	**.40**	-	-
7.	Feel like banging my stick.	**.36**	-	-
11.	Feel like hurting someone.	-	**1.02**	-
14.	Feel like pounding someone.	-	**.78**	-
8.	Feel like hitting someone.	-	**.78**	-
4.	Feel like yelling at somebody.	-	**.43**	-
12.	Feel like cursing out loud.	-	-	**.96**
9.	Feel like swearing.	-	-	**.85**
15.	Feel like shouting out loud.	-	-	**.66**
13.	Feel like screaming.	-	-	**.45**

Note. N = 208 (Goaltender data are excluded). Factor 1 = Feeling Angry; Factor 2 = Feel Like Expressing Anger At Someone; Factor 3 = Feel Like Expressing Anger Verbally. Factor pattern loadings < |.30| are not shown.

Appendix F

Original Pattern Coefficients from Principal Axes Analysis of the High Crit S-Ang Scale

Item	Item Descriptions	F1	F2	F3
10.	Feel irritated.	.88	-	-
2.	Feel annoyed.	.81	-	-
6.	Feel mad.	.71	-	-
3.	Feel angry.	.71	-	-
1.	Become furious with myself.	.69	-	-
7.	Feel like banging my stick.	.33	-	-
11.	Feel like hitting someone.	-	.94	-
14.	Feel like pounding someone.	-	.89	-
8.	Feel like hurting someone.	-	.86	-
4.	Feel like yelling at somebody.	-	.42	-
5.	Feel like breaking my stick.		.34	.32
12.	Feel like cursing out loud.	-	-	.94
9.	Feel like swearing.	-	-	.86
15.	Feel like shouting out loud.	-	-	.80
13.	Feel like screaming.	-	-	.58

Note. N = 208 (Goaltender data are excluded). Factor 1 = Feeling Angry; Factor 2 = Feel Like Expressing Anger At Someone; Factor 3 = Feel Like Expressing Anger Verbally. Factor pattern loadings < |.30| are not shown.

Appendix G

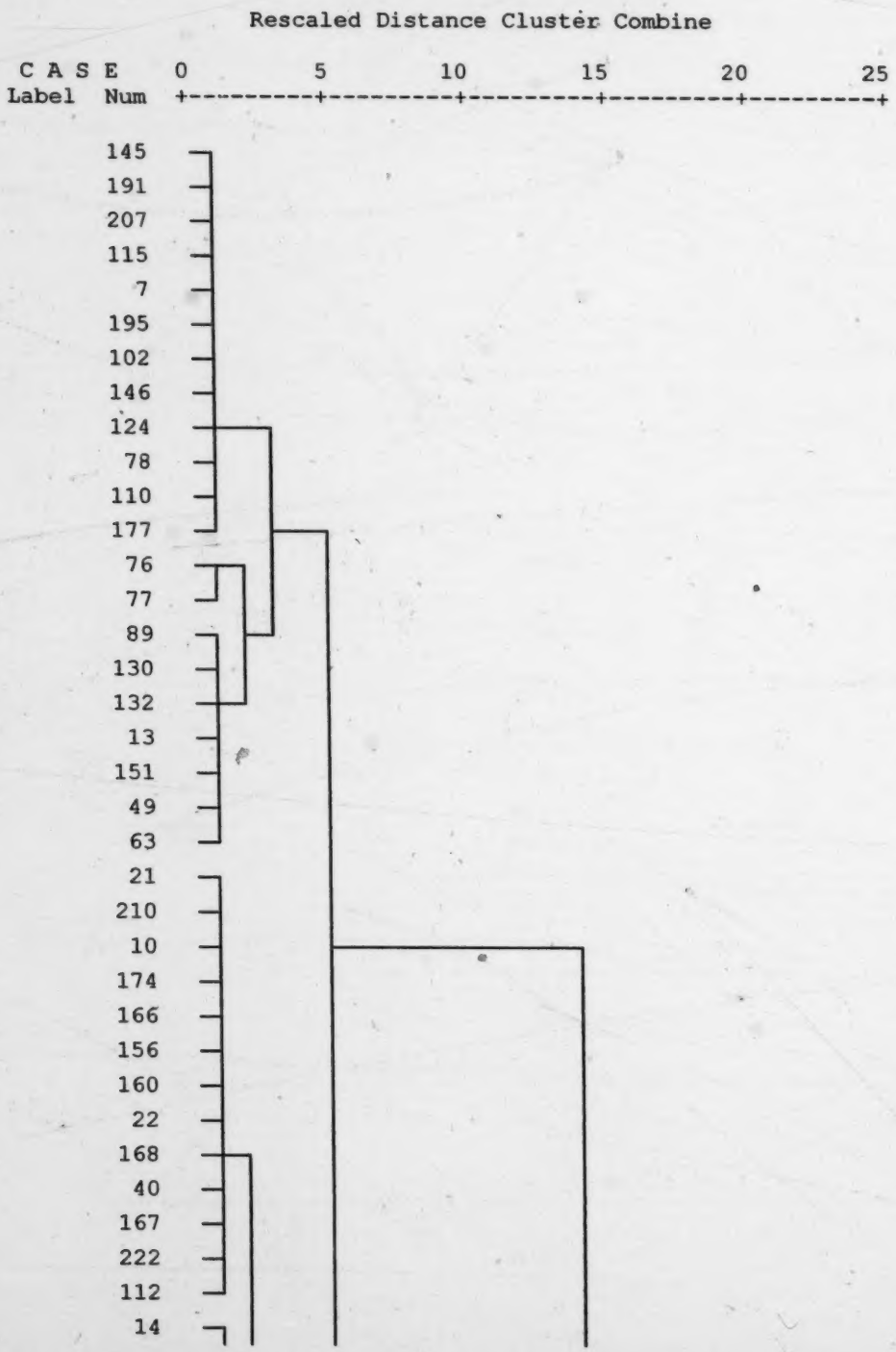
Agglomeration Schedule

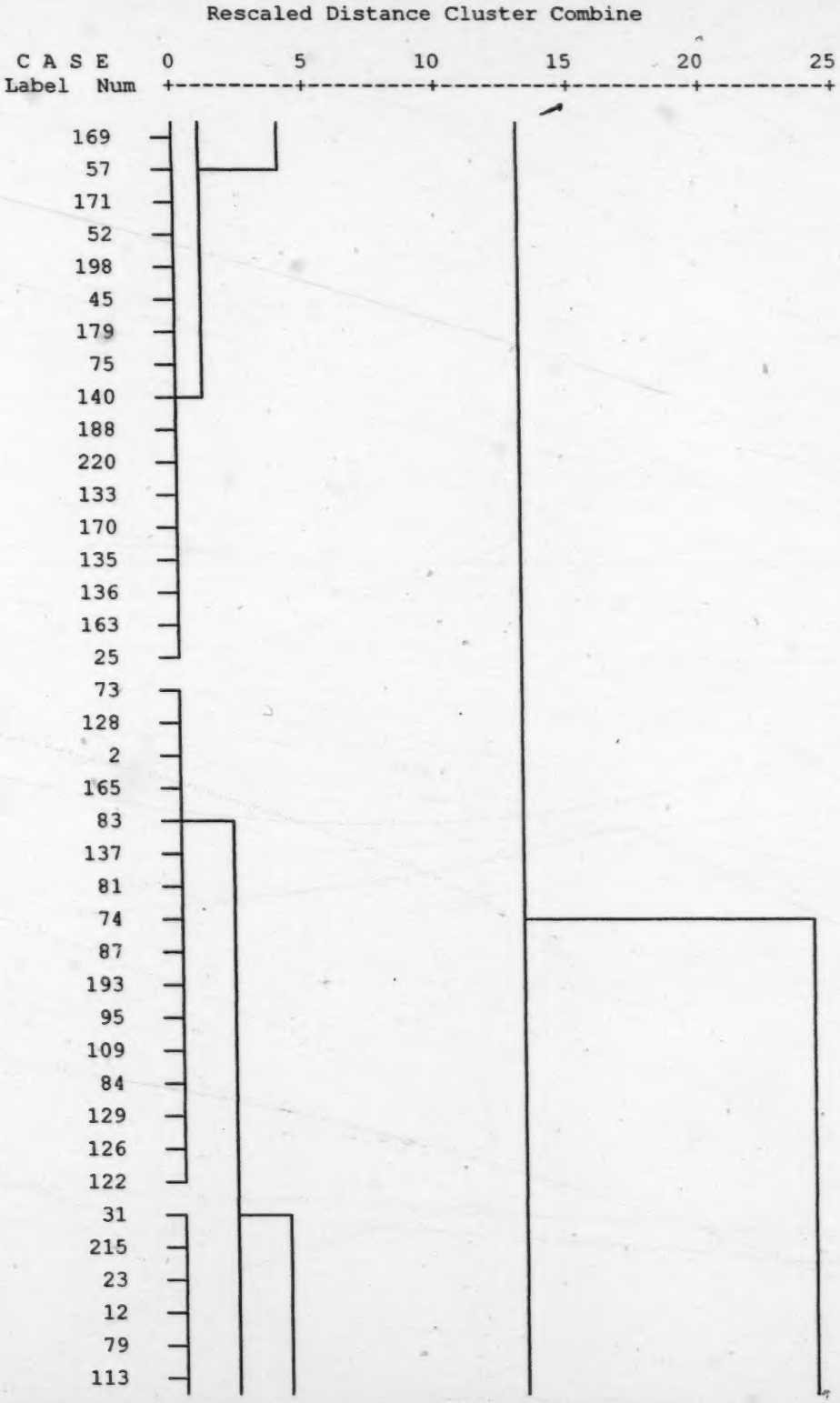
Agglomeration Schedule Beginning at Stage 180

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
180	2	84	2439.753	144	172	189
181	26	69	2514.311	153	162	199
182	15	39	2591.896	152	136	191
183	25	133	2670.638	0	173	187
184	7	110	2760.738	176	146	201
185	18	27	2859.813	165	163	199
186	11	142	2969.896	143	167	195
187	14	25	3082.391	154	183	196
188	37	213	3219.462	157	0	194
189	2	73	3357.021	180	119	200
190	38	97	3495.944	179	150	194
191	6	15	3638.684	170	182	200
192	3	4	3782.857	178	164	198
193	1	71	3929.380	169	156	198
194	37	38	4142.079	188	190	205
195	11	28	4388.018	186	177	202
196	10	14	4640.485	174	187	204
197	13	76	4908.713	168	147	201
198	1	3	5196.000	193	192	202
199	18	26	5542.680	185	181	205
200	2	6	5938.589	189	191	203
201	7	13	6348.703	184	197	204
202	1	11	7063.056	198	195	203
203	1	2	7866.443	202	200	206
204	7	10	8720.379	201	196	206
205	18	37	9677.930	199	194	207
206	1	7	12256.149	203	204	207
207	1	18	16948.543	206	205	0

Appendix H

Dendrogram using Ward's Method

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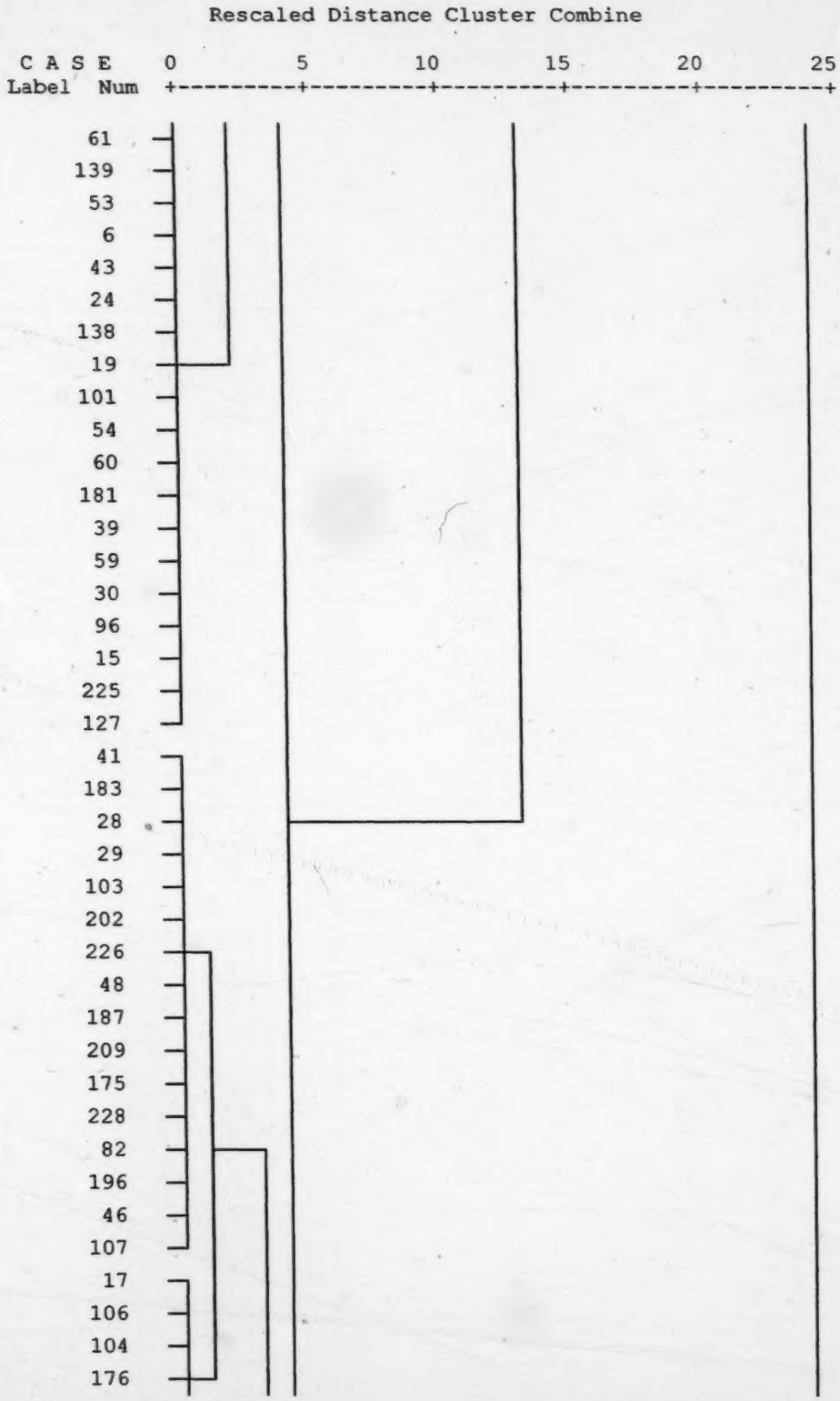
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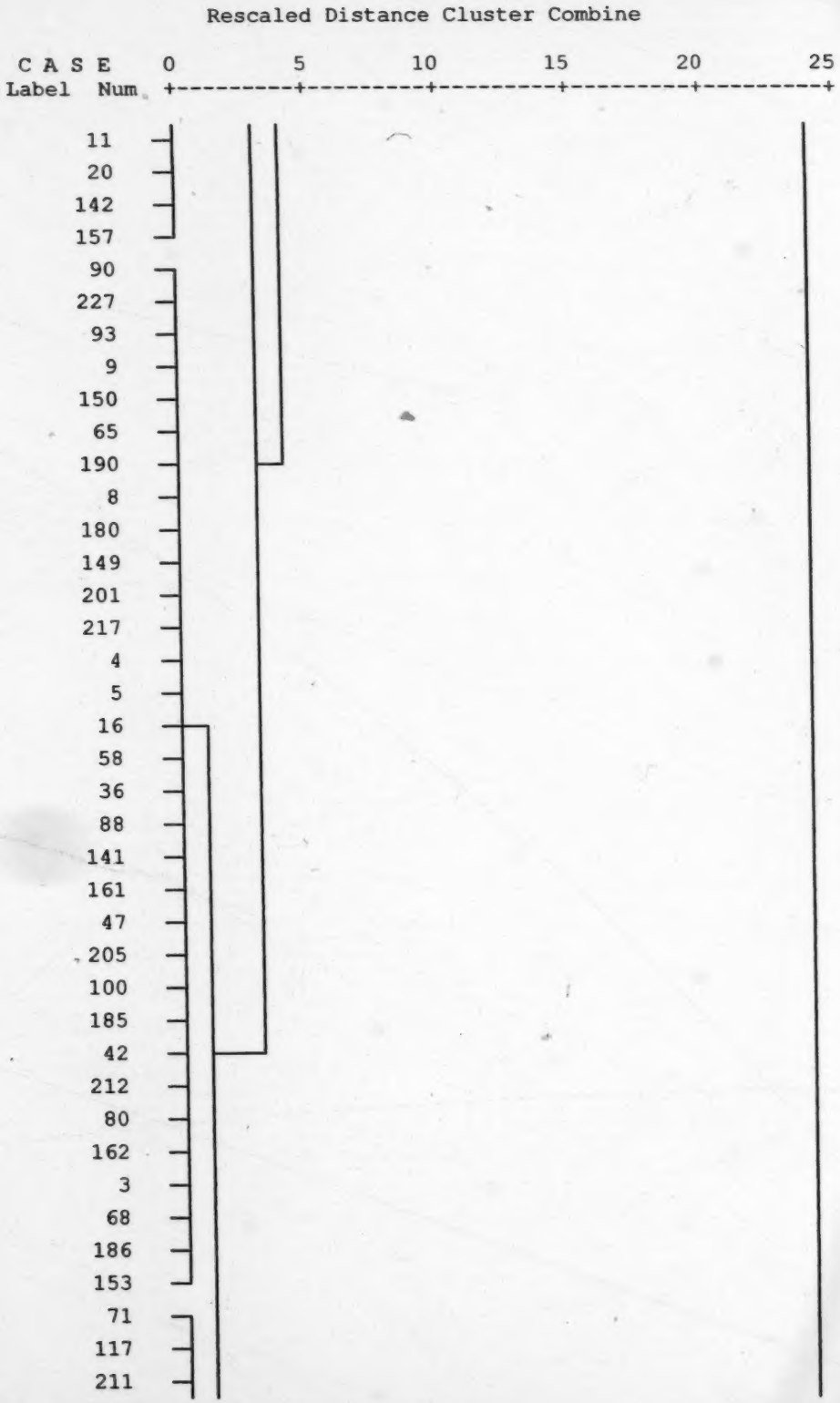
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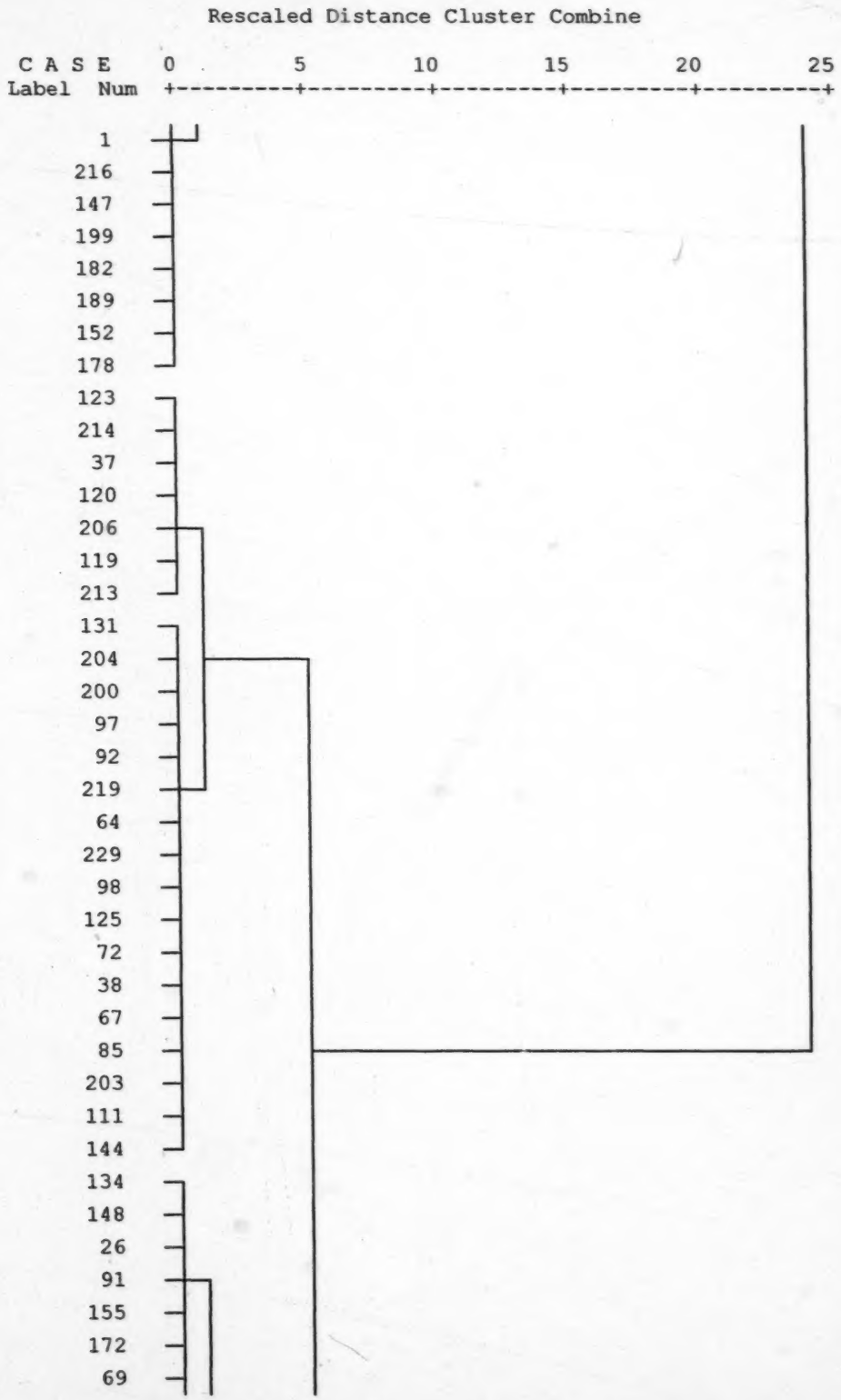
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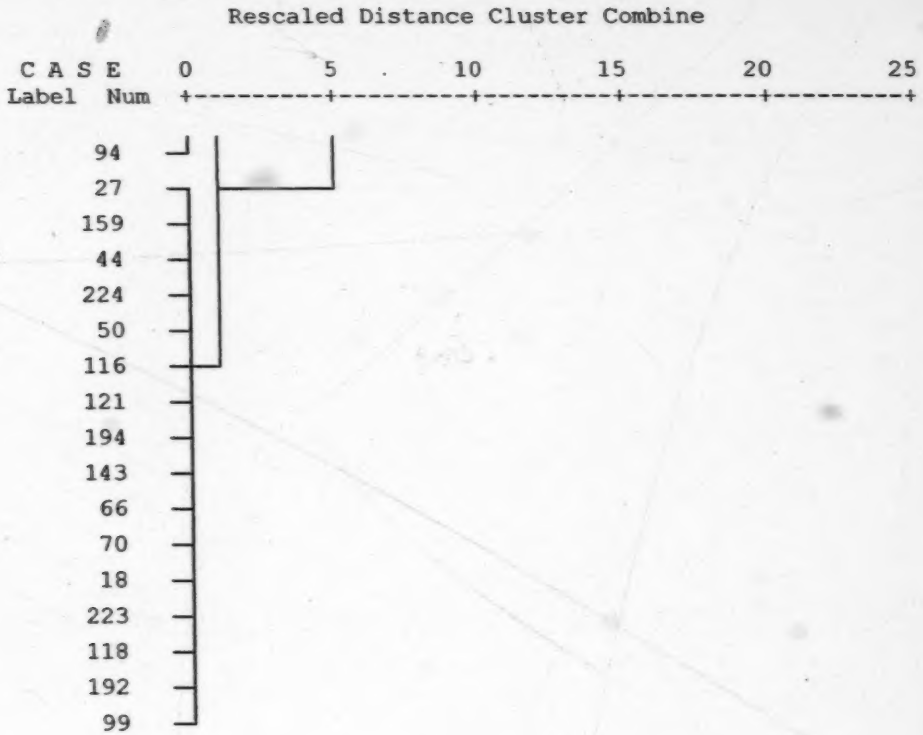
172
69


Rescaled Distance Cluster Combine
C A S E
Label Num
0
5
10
15
20
25
94
27
159
44
224
50
116
121
194
143
66
70
18
223
118
192
99